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BASELINE ELEMENTS AND INFORMATION SOURCES FOR ENVIRONMENTAL QUA--ETC(U)
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TECHNICAL REPORT M-76-10

BASELINE ELEMENTS AND INFORMATION SOURCES FOR ENVIRONMENTAL QUALITY MANAGEMENT OF MILITARY INSTALLATIONS

by

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The National Environmental Protection Act of 1969 requires that the Army conduct its activities without degrading the environmental quality of the surrounding area. The immediate goals of environmental quality management as established by the Act could not be attained by Army facilities using available technology. For the Army's future mission to be compatible with the Nation's environmental quality standards, the Office, Chief of Engineers, U. S. Army,

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established a research program on 1 July 1974 entitled "Environmental Quality for Construction and Operation of Military Facilities" with the primary responsibility for conducting the program assigned to the Construction Engineering Research Laboratory (CERL) at Champaign, Illinois.

As part of CERL's response to this assignment, an automated system was structured to identify impacts of Army activities on the environment. This system, called the Environmental Impact Computer System (EICS), requires that the user have some knowledge of Army activities and the environment to be able to collect required input data and to interpret the output of the EICS. CERL requested that the U. S. Army Engineer Waterways Experiment Station compile a list of environmental baseline elements and assemble a catalog of environmental information sources to aid personnel using the EICS as well as to provide background material for those personnel charged with preparation of Environmental Impact Assessments and Statements.

The information sources are available via an information system structured for this study. Access to this system can be obtained by contacting CERL.

PREFACE

Personnel of the Environmental Simulation Branch (ESB), Environmental Systems Division (ESD), Mobility and Environmental Systems Laboratory (MESL), U. S. Army Engineer Waterways Experiment Station (WES), conducted the study reported herein from April to October 1975. The work supported DA Project 4A762720A896, "Environmental Quality for Construction and Operation of Military Facilities," Task 006, "Methodology for Characterization of Military Installations Environmental Baselines," under the sponsorship of the Directorate of Military Construction, Office, Chief of Engineers (OCE), U. S. Army. As requested, this study supports the requirement to provide sources for obtaining quantitative data needed to delineate current pollution potential and environmental characteristics of Army installations and facilities (QCR 1.03.006). The OCE Technical Monitor was Mr. Vincent J. Gottschalk.

The study was under the direct supervision of Mr. J. K. Stoll, Chief, ESB, and under the general supervision of Messrs. W. G. Shockley, Chief, MESL, and B. O. Benn, Chief, ESD. Mr. M. P. Keown, ESB, compiled the list of environmental baseline elements. Messrs. Keown, E. A. Dardeau, Jr., and T. J. Allen, ESB, and Ms. M. L. Doiron, MESL, were responsible for locating, examining, and classifying the information sources. Dr. V. E. LaGarde and Mr. M. R. Weathersby, ESB, structured the computerized information system, and Messrs. Keown and Weathersby prepared the report.

COL G. H. Hilt, CE, and COL J. L. Cannon, CE, were Directors of WES during the study and preparation of the report. Mr. F. R. Brown was Technical Director.

CONTENTS

BASELINE ELEMENTS AND INFORMATION SOURCES FOR ENVIRONMENTAL QUALITY MANAGEMENT OF MILITARY INSTALLATIONS

PART I: INTRODUCTION

Background

1. The era of "environmental awareness" has added a new dimension to the Army's overall mission plan. In an effort to meet the goals set forth in the National Environmental Policy Act (NEPA) of 1969 (Public Law 91-190), military personnel must plan Army activities not only to meet mission requirements but also to ensure that the activities are not in violation of environmental protection laws and standards. NEPA became effective on 1 June 1970 in response to a national realization that mankind's technology must not advance at the expense of the natural environment. The act is divided into two basic parts: Title I and Title II. Title I sets forth the national policy on restoration and protection of environmental quality. Title II establishes the Council on Environmental Quality (CEQ). This council develops and recommends to the President national policies that promote environmental quality, performs a continuing analysis of changes or trends in the national environment, and assists the President in the preparation of the annual environmental quality report to Congress.

2. The technology available to environmental quality managers at Army installations at the time when NEPA became effective was not adequate to meet the goals specified by NEPA. For the Army's future mission to be compatible with the Nation's environmental quality standards, the Office, Chief of Engineers, established a research program on 1 July 1974 entitled "Environmental Quality for Construction and Operation of Military Facilities," with the primary responsibility for conducting the program assigned to the Construction Engineering Research Laboratory (CERL) at Champaign, Illinois. The major objectives of this program are to explore and develop technology that will enable military

facilities to conform to the national goals for environmental quality. The results of this research effort will assist Army personnel at all levels in responding to NEPA and corollary legislation* as well as aid the Army in meeting the objectives of the Army's Environmental Program.[3]

3. An important consequence of NEPA is that the Army must integrate the preparation of Environmental Impact Assessments (EIA's) and Environmental Impact Statements (EIS's) into current and planned activities. The assessments and statements differ in purpose and use. An EIA is the basis for a preliminary assessment of the impact of a military activity on the environment and is designed to provide information adequate for judging whether an EIS should be prepared. If after review of the EIA, it becomes apparent that the proposed or existing military activity will have a significant effect on the quality of the environment, or the activity is or will be environmentally controversial, then an EIS must be prepared. An EIS is a much more detailed analysis of the environmental consequences of a military activity than an EIA prepared for the same activity. After preparation and review by the proponent group, the EIS must be submitted to Headquarters, Department of the Army, and, subsequently to CEQ for approval, before any major action is taken.**

4. As part of CERL's research effort, a handbook[3] has been assembled that is a step-by-step guide for preparing EIA's and EIS's. Included in the handbook is Chapter 2 of Army Regulation 200-1, "Environmental Consideration in DA Actions,"[4] which assigns responsibilities, establishes procedures for assessing the environmental impact of Department of the Army actions on the quality of the environment as required by NEPA, and implements Department of Defense Directive 6050.1, "Environmental Considerations in DOD Actions," dated 19 March 1974. In addition to the handbook, CERL has developed the Environmental Impact

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* A complete listing of significant documents establishing requirements for protection of environmental quality can be found in Appendix A of References 1 and 2.

** A list of EIS's prepared for military installations is provided in Appendix A. A list of sources that can be used for locating EIA's and EIS's prepared for specific areas is presented in Appendix B.

Computer System (EICS).[5-9] The primary function of this automated system is to assist personnel preparing EIA's and EIS's in the identification of military activity impacts on the environment. As an aid to preparing the input data required by the EICS and interpreting its output, CERL requested that the U. S. Army Engineer Waterways Experiment Station (WES) undertake two tasks. The first task was to compile a list of environmental baseline elements for use in preparing a baseline description of a military installation or a specific project site. The second task was to assemble a catalog of environmental information sources compatibly indexed with the categories used by the EICS.

Objectives

5. The objectives of this study were to (a) develop a list of environmental elements that can be used to prepare a baseline description of a military installation or specific project site and (b) assemble a catalog of information sources that can be used as an aid in preparing the required input for the EICS and interpretation of its output, as well as providing background material for those personnel charged with preparation of EIA's and EIS's.

PART II: THE ENVIRONMENTAL IMPACT COMPUTER SYSTEM

6. Preparation of an EIA or EIS is a formidable task for Army personnel who are unfamiliar with NEPA and with environmental quality terminology. To alleviate part of this problem, CERL has constructed the EICS to aid personnel in identifying potential impacts of military activities on the environment.

Function of the EICS

7. The function of the EICS can be best visualized as a matrix that identifies relations between Army activities and characteristics of the environment. Army activities have been divided by CERL into nine functional areas:

a. Administration and support
b. Construction
c. Industrial activities
d. Mission change
e. Operation and maintenance
f. Procurement
g. Real estate acquisition or outlease of land
h. Research, development, testing, and evaluation
i. Training

Characteristics of the environment have been divided into 13 technical specialties:

a. Ecology
b. Environmental health
c. Air quality
d. Surface water
e. Groundwater
f. Sociology
g. Economics
h. Earth science

i. Land use

j. Noise

k. Transportation

l. Aesthetics

m. Energy and resource conservation

Thus, a matrix can be constructed relating functional areas to technical specialties.

8. An impact between a particular functional area and one of the 13 technical specialties can be represented by an entry in the appropriate matrix intersection; however, in writing an EIA or an EIS, the information at this generalized level will probably be of little use, i.e., an entry in the matrix indicating an interaction between construction and economics may not be meaningful for a specific problem. A greater level of detail is needed. To meet this need, each functional area has been divided by CERL into basic activities associated with Army programs, e.g., some of the basic activities associated with construction are temporary roads, equipment fueling or maintenance, solid waste disposal, etc. The technical specialties have been divided into descriptive characteristics termed environmental attributes, e.g., some of the environmental attributes for ecology are small animals, birds, fish, reptiles, etc. Thus, the EICS is structured to have the capability of outputting basic Army activities under each functional area and environmental attributes under each technical specialty. For each functional area, a matrix of basic Army activities versus environmental attributes is available for each of the technical specialties. Some of the functional areas have been defined to be even more specific regarding the type of impacting activity. For instance, the construction functional area is divided into facility codes for specific types of construction projects, such as building supply facilities, family housing units, and airfields. If an airfield is to be constructed, a matrix of basic Army activities versus environmental attributes is available for each technical specialty and directed specifically toward airfield construction.

Input to the EICS

9. The EICS can be accessed by filling out an input form for the functional area of interest and transmitting it to CERL (Figure 1). CERL will input the coded data to the EICS and return the output. Input forms are available in the back of the appropriate user manual[6-9] prepared by CERL for each functional area. Each manual describes the EICS and gives instructions on how data should be prepared for input and how to interpret the output.

10. The person preparing the input form for the EICS must have a general working knowledge of the proposed or existing Army activity under examination and the potential environmental problems that may result. In addition to general qualitative information, he may need some specific information pertinent to the activity and environmental characteristics of the site to answer questions on the input form relevant to the following:

a. Technical specialties to be considered.

b. Subprograms to be selected.

c. Detail or review level attributes.

d. Impact option.

e. Answers to filter questions.

f. Economic information about the activity.

11. Technical specialties that have no relevance to the site should be initially eliminated from consideration. For example, if a storage facility is to be constructed at a remote site, then possibly the environmental health, air quality, sociology, economics, noise, and aesthetics technical specialties need not to be considered. Codes for the remaining technical specialties should be entered in item 5 (Figure 1), and the total number in item 6.

12. The subprograms (item 7, Figure 1) to be selected depend on the functional areas being examined. If the construction functional area is being considered, a subprogram is chosen that corresponds to the facility code, i.e. construction of an airport or family housing units. Guidance for the selection of applicable subprograms for other

INPUT FORM NUMBER 1 — CONSTRUCTION FUNCTIONAL AREA

1. PROJECT NAME: _____

2. INSTALLATION: _____ TEL. NO. (COMM.) _____

3. RESPONDENT's NAME: _____ (FTS.) _____

ADDRESS: _____

_____

_____

4. ENVIRONMENTAL INFORMATION INPUT FOR SITE #: _____

6. NUMBER OF TECHNICAL SPECIALTIES _____ 8. DETAIL OR REVIEW LEVEL ? _____

7. NUMBER OF SUBPROGRAMS _____ 9. IMPACT OPTION — A only — AB — ABC (circle one)

5. OUTPUT SELECTION: FACILITY CLASS CODE (SEE TABLE 2 FOR CODE NUMBERS)

8. TECHNICAL SPECIALTIES									
ECOLOGY									
ENV. HEALTH									
AIR QUALITY									
SURFACE WATER									
GROUND WATER									
SOCIOLOGY									
ECONOMICS									
EARTH SCIENCE									
LAND USE									
NOISE									
TRANSPORTATION									
AESTHETICS									
PRINT RAMIFICATION TEXT									
PRINT MITIGATION TEXT									

10. ANSWERS TO FILTER QUESTIONS ABOUT THIS SITE:

8. TECHNICAL SPECIALTIES	Q-1	Q-2	Q-3	Q-4	Q-5	Q-6	Q-7	Q-8	Q-9	Q-10
ECOLOGY										
ENV. HEALTH										
AIR QUALITY										
SURFACE WATER										
GROUNDWATER										
ECONOMICS										
SOCIOLOGY										
EARTH SCIENCE										
LAND USE										
NOISE										
TRANSPORTATION										
AESTHETICS										

11. IS DD FORM 1390 AND 1391 ATTACHED ___YES ___NO; OR STATE DOLLAR VALUE OF EACH FACILITY CLASS TO BE ASSESSED _____, AND NUMBER OF YEARS OF CONSTRUCTION FOR EACH FACILITY TO BE ASSESSED _____.

Figure 1. EICS input form for the construction functional area

functional areas can be obtained in the CERL user manual for the functional area.

13. Environmental attributes (paragraph 8) may be evaluated at the detail or review level (item 8, Figure 1). Examination of the impact of Army activities on attributes at the detail level provides adequate specificity for preparation of an EIA or EIS. Selection of the review level in item 8 will present a broad overview which will provide a useful summary of potential impacts for use at the management or general staff level. Guidance for the selection of the applicable level of evaluation is provided in the CERL Attribute Descriptor Package[10] (paragraph 18).

14. Any particular activity may impact on virtually all the environmental attributes; however, a person who is assessing an environmental impact must identify the relative importance of the attributes in describing the impact. A "need-to-consider" scale was developed by CERL for the EICS to indicate which attributes are most likely to be impacted. The need-to-consider indicators are defined as follows:

A = definitely consider this attribute as being potentially impacted upon by the activity.

B = possible impact requires consideration.

C = consider impact in special cases.

Blank = no known impact of activity on attribute.

An impact option is provided for the EICS user on the input form (item 9, Figure 1).

15. Specific problems related to the site are input to the EICS by answering a set of "filter" questions provided in the user manual for each functional area (item 10, Figure 1). Economic information pertinent to the activity (item 11, Figure 1) is supplied on standard Department of Defense forms that are attached to the EICS input form when it is submitted to CERL. If ramification and mitigation comments are desired, an appropriate entry is made in item 5 (Figure 1) following instructions provided in the user manual.

16. As indicated in paragraph 10 and further discussed in paragraphs 11-15, comprehensive subjective and objective information

is sometimes needed to complete the EICS input form. In many cases, the person responsible for preparing the form may not have the broad background knowledge required to effectively prepare all portions of the form. A source of supplemental information is needed to provide this adequate background information. CERL requested that WES undertake two tasks to meet this need. The first was to compile a list of environmental baseline elements that would alert a person to key factors that should be considered when impacts of Army activities on the environment are to be considered. This list of elements is presented in Part III (see also Appendix C). The second task was to assemble a catalog of environmental information sources that would provide guidance in understanding the terminology associated with completing the input form as well as the terms used in the list of environmental baseline elements. This catalog of environmental information sources is discussed in Part IV.

Output of the EICS

17. The EICS output consists of a matrix of Army activities versus environmental attributes (Figure 2). An impact between an activity and an attribute is represented by an intersection in the matrix containing an A, B, or C (as defined in paragraph 14). After verification that the attribute does exist, the full interrelation between the activity and the environment must be developed prior to preparation of an EIA/EIS. Four aids are available to help develop the needed relations:

a. CERL attribute descriptor package.

b. Ramification and mitigation comments (paragraph 15).

c. WES environmental baseline list (Part III).

d. WES information sources (Part IV).

18. The attribute descriptor package was developed by CERL to provide basic information about each attribute at the detail or review level. Each attribute available in the EICS is described in this document. The attribute descriptors are not available in the EICS output but are available as a separate document from CERL.[10] Ramification and

SUB-PROGRAM CODE = 1710, SUB-PROGRAM NAME = FAMILY HOUSING

TECHNICAL SPECIALTY = ECOLOGY

IMP. ATTRI. CODE, ATTRI. NAME

2	SMALL MAMMALS	14	FUNGI	27	WARM WATER FISHING
3	BIRDS	15	LICHENS	28	COLD WATER FISHING
4	FISH	16	OTHER PLANT SPECIES	30	COASTAL WATER FISHING
5	REPTILES	17	ENDANGERED PLANT SPECIES	31	SHELLFISH
6	AMPHIBIANS	18	FOOD WEBS	32	DEEP SEA FISHING
8	OTHER ANIMALS	19	PRODUCTIVITY	33	DISEASE VECTORS
10	TREES	20	SEASONAL ASPECT	34	NOXIOUS WEEDS
11	SHRUBS	21	STRATIFICATION	35	OTHER UNDESIRABLE SPECIES
12	HERBS	22	SUCCESSIONAL STAGE	41	IMPACTS ON GAME ANIMALS
13	ALGAE	23	SMALL GAME HUNTING	42	ENCROACHMENT ON NATURAL HABITATS
		26	BOTTOM LIFE	43	THREATENED SPECIES

IMP. BAAP CODE	IMP. BAAP NAME	BAAP NO.	ATTRIBUTES 2	3	4	5	6	8	10	11	12	13	14	15	16	17	18	19	20	21	22	23	26	27	28	30	31	32	33	34	35	36	37	41	42	43	RAM-MIT CODE
60	SUPPORT OPERATIONS	60																																	C		1060
61	TEMPORARY ROADS	61																													A	B	C				1061
64	EQUIPMENT FUELING/MAINTENANCE	64			A							B											B	A	A	B	A										1064
66	SOLID WASTE DISPOSAL	66	B																										A		A							1066
67	LIQUID WASTE DISPOSAL	67			B							A																	B		A							1067
73	CLEARING SITE	73	C	A	A	A	A				A		A		C	B	A	A	C	C	C	C									A	B	C	B	A	C	1073
74	GRUBBING SITE	74	C	B	A	A	A	C		C	A	A					C	B			C		B	A	A					A	A						1074
75	STUMPING SITE	75	C	B	A	A	A	C		C	A	A					C	B			C		B	A	A					A							1075
76	DRAINING SITE	76			B	B	A	B	C	B	A				B		B	A		B	B	B	B	B	A	B	B					C		C		1076
90	REMOVAL AND DISPOSAL	90																														B					1090
91	BRUSH REMOVAL/DISPOSAL	91			C	B	C			C	B		A				B				B		C	B	B			C		C						1091
92	TREE REMOVAL/DISPOSAL	92			C	B	C			C	B		A				B				B		C	B	B			C		C						1092
100	EXCAVATION	100																													A	B	C	B	B		1100
101	TOPSOIL STRIPPING	101		A	A	B	A	B		B	A	A			B	C	B	A			A	A	B	A	A	A				B							1101
102	GRADING	102			A	B	A	B	A	B	A	A			C		B	A			A		B	A	A	A				B							1102
104	TRENCH AND BACKFILL OPERATIONS	104							B																				B	A							1104
120	EARTHWORKS AND BORROWING	120																													A	B	C	B	B		1120
		122			A		A	B		B	A	A			C		B	A			B		B	A	A	A				B							1122
		124							B																												1124
		125				B		B	A						C		C													B							1125
		126																												B							1126
		127																												B							1127
		168		B	C	B	C	B				B											C	A	A		A		C		B						1168
		169		B	C																								C								1169
		180																													B						1180
		185							C																												1185
		187			B	A	A	A				A					C	B					C	B	A	B	B										1187
		204																						C	B												1204
		206																						C	B												1204
		211			C	C	C					B												C	B												1211
		227			C	C	C					B												C	B												1211
		262		B	B	B		A				A	B	B	B	C	B	A			C	A	C	B	A	B	B	C	B								1262
		285		B	C		C	C	C	B	B	C			B		C	C	C		C	A	C	B	A	B	B	C	C	C	B	B					1285

Figure 2. Sample EICS output for the construction functional area

mitigation comments are available for various activities as part of the EICS output (see last column of matrix in Figure 2 for codes of pertinent comments; sample comments are provided in Figure 3). The ramification comments are directed toward describing the results of an impact or further explaining the impact of an activity on an attribute. Mitigation comments provide information on how impacts can be minimized or avoided.

19. The WES list of environmental baseline elements can be used as an aid to develop further information on environmental attributes. Using the list, attributes like small mammals can be described by terms found in the list, such as community composition, species occurrence, and species characteristics. Attachment of these terms to an attribute will help to develop a meaningful understanding of an Army activity impact on the attribute. Specific qualitative and quantitative information relevant to the various terms in the list can, in many cases, be obtained by consulting the WES catalog of environmental information sources (Part IV).

1061

/RAMIFICATIONS/
CONSTRUCTION OF TEMPORARY ACCESS ROADS MAY REPRESENT THE FIRST MAJOR INTRUSION INTO A REMOTE BUILDING SITE. NUMEROUS SUPERFLUOUS ROADS MAY CAUSE MORE TERRAIN DAMAGE THAN THE PROJECT ITSELF.

/MITIGATIONS/
PLAN ACCESS ROADS CAREFULLY: IMPROVE THEM IF NECESSARY: THEN RESTRICT DEVELOPMENT OF ALL OTHER ROADS AND PATHS.

1067

/RAMIFICATIONS/
TEMPORARY TOILET FACILITIES MAY CAUSE SEVERE, HAZARDOUS CONTAMINATION OF SMALL, LOCAL DRAINAGE WAYS.

/MITIGATIONS/
REQUIRE THAT ALL TEMPORARY TOILETS ON SITES BE EQUIPPED WITH APPROVED SEPTIC TANKS WITH SAFE DRAINAGES OR WITH CLOSED HOLDING TANKS WHICH ARE EMPTIED ONLY INTO APPROVED TREATMENT PLANTS, AND NEVER DUMPED INTO WATERWAYS OR ON THE SOIL SURFACE ON OR OFF THE INSTALLATION.

1073

/RAMIFICATIONS/
REMOVAL OF TREES DRASTICALLY ALTERS THE ECOLOGICAL BALANCE AND AESTHETIC INTEREST OF ANY AREA WHERE IT IS DONE. IT REMOVES HABITAT FOR MANY ANIMALS, REMOVES FOOD SOURCES FOR STILL OTHERS, STRESSES REMAINING SMALLER PLANT ASSOCIATIONS AND OFTEN LEADS TO INCREASES IN PLANT AND ANIMAL PESTS.

/MITIGATIONS/
REMOVAL OF TREES IS AN UNAVOIDABLE IMPACT IF THE SITE IS TO BE USED. BUT CONTRACTS SHOULD CLEARLY SPECIFY LIMITS OF CLEARING. ALTERNATE SITES MIGHT BE USED IF FORESTED AREAS ARE LOCALLY SCARCE.

1076

/RAMIFICATIONS/
NATURALLY WET SITES SUPPORT A VERY WIDE VARIETY OF PLANT AND ANIMAL SPECIES. DRAINAGE OF THESE SITES MAY HAVE FAR-REACHING SECONDARY EFFECTS ON OTHER ANIMAL POPULATIONS WHICH DEPEND ON THE MARSHY AREAS FOR FOOD PRODUCTION.

/MITIGATIONS/
IF NATURALLY WET SITES MUST BE UTILIZED FOR LACK OF AN ALTERNATE, THESE EFFECTS ARE UNAVOIDABLE. INDISCRIMINATE DRAINAGE OF ALL WET SITES WHERE NO PRESSING PLANS EXIST FOR USE OF THE AREA IS ENVIRONMENTALLY UNACCEPTABLE.

1091

/RAMIFICATIONS/
BURNING OF BRUSH ON-SITE MAY STERILIZE SOILS THROUGH HEAT, CAUSE UNCONTROLLED WOOD FIRES, AND EVENTUALLY CAUSE SOIL EROSION. ITS DISPOSAL NEAR OR IN WATER FEATURES CAUSES FLOODING, DETERIORATION OF WATER QUALITY AND THE POSSIBILITY OF ENHANCING CONDITIONS FOR ANIMAL PESTS.

/MITIGATIONS/
PREFERABLE DISPOSAL TECHNIQUES FOR BRUSH INCLUDE CHIPPING FOR SALE OR DISPERSED DISPOSAL, INCINERATION IN APPROVED DEVICES, SHREDDING FOR COMPOSTING, AND POSSIBLE SALE FOR FUEL.

1092

/RAMIFICATIONS/
BURNING OF TREES ON-SITE WILL DAMAGE REMAINING VEGETATION NOT INTENDED TO BE REMOVED, CAUSE EVENTUAL SOIL EROSION AND RESULT IN SAFETY HAZARDS DUE TO POSSIBILITY OF UNCONTROLLED FIRES, WITH SUBSEQUENT DESTRUCTION OF ADJACENT ANIMAL AND PLANT POPULATIONS.

/MITIGATIONS/
PREFERABLE DISPOSAL TECHNIQUES FOR TREES INCLUDE SALE FOR TIMBER OR FIREWOOD, CHIPPING FOR USE IN MAINTAINING UNPAVED ROADS AND FOOT PATHS, ON-POST USE FOR RUSTIC RECREATIONAL STRUCTURES AND INCINERATION OF UNUSABLE TREES IN APPROVED DEVICES.

1101

/RAMIFICATIONS/
WHEN THE UPPER STRATA OF THE SOIL ARE REMOVED, ALL PLANTS AND ALMOST ALL ANIMAL SPECIES ARE DESTROYED, SUBSEQUENT EROSION OF THE AREA MAY ALSO LEAD TO SILTATION OF NEARBY BODIES OF WATER.

/MITIGATIONS/
SOIL SHOULD BE STRIPPED FROM AS SMALL AN AREA AS POSSIBLE, AND AS CLOSE TO THE DATE OF CONSTRUCTION AS POSSIBLE. SPOIL PILES WHICH WILL REMAIN LONGER THAN 45 DAYS MUST BE SEEDED HEAVILY WITH ANNUAL GRASSES IMMEDIATELY. SEDIMENT TRAPS MUST BE USED IF ANY WATER BODIES ARE WITHIN 200 M (ABOUT 600 FT) DOWNSLOPE.

1180

/RAMIFICATIONS/
WHEN LARGE AREAS ARE PAVED, AS IN MAKING PARKING LOTS, THE INCREASED RUNOFF WATER MAY CREATE BODIES OF STANDING WATER ON PREVIOUSLY DRY SITES. THIS STAGNANT WATER MAY LEAD TO INCREASED NUMBERS OF MOSQUITOS AND OTHER INSECT PESTS.

/MITIGATIONS/
PROVIDE IMPERVIOUS DRAINAGE CHANNELS FOR ALL PAVED SURFACES WHICH DIRECT WATER TO EXISTING STORM CHANNELS OF ADEQUATE CARRYING CAPACITY. AVOID GENERALIZED SURFACE SPILLAGE OF WATER.

1262

/RAMIFICATIONS/
ALL COMMON WOOD PRESERVATIVES ARE HIGHLY TOXIC TO LIVING PLANTS AND ANIMALS, ESPECIALLY FISH. DISPOSAL OF EXCESS QUANTITIES HAS OFTEN STERILIZED SOIL, KILLED FISH AND CAUSED THE DEATH OF DESIRABLE ORNAMENTAL PLANTS.

/MITIGATIONS/
ENSURE THAT LEFTOVER QUANTITIES ARE NEVER DISPOSED OF ON-SITE ON THE SOIL, IN WATER BODIES, IN DRAINAGE DITCHES OR DOWN STORM DRAINS OR SANITARY SEWERS. DISPOSAL OF EMPTY CONTAINERS AND EXCESS CHEMICALS SHOULD FOLLOW EPA GUIDELINES.

1285

/RAMIFICATIONS/
LANDSCAPING WITH EXOTIC SPECIES OR WITH POORLY ADAPTED SPECIES HAS OFTEN INTRODUCED WEEDS AND PESTS INTO DISTURBED AREAS AROUND CONSTRUCTION SITES, WHERE THEY FLOURISH. FUNGICIDES, INSECTICIDES, AND FERTILIZERS USED ON NEW PLANTINGS OFTEN WASH INTO BODIES OF WATER, UPSETTING EXISTING PLANT AND ANIMAL LIFE.

/MITIGATIONS/
USE CERTIFIED SEED SOURCES AND NURSERY STOCK KNOWN TO BE ADAPTED TO THE AREA. PLANT IMMEDIATELY FOLLOWING CONSTRUCTION SO SITE IS NOT LEFT OPEN TO INVASION. FOLLOW LABEL DIRECTIONS IN USE OF CHEMICAL PRODUCTS RIGOROUSLY. APPLY FERTILIZERS IN QUANTITIES CALCULATED NOT TO EASILY LEACH OUT OF THE SOIL.

Figure 3. Sample ramification and mitigation comments for the construction functional area

PART III: ENVIRONMENTAL BASELINE ELEMENTS

20. An evaluation of the total impact of Army activities on the environment requires that an inventory of basic environmental data be available for the activity area. This set of data will be an aid in the preparation of EIA's and EIS's as well as providing a base for future reference, so that temporal changes in the environmental quality of the area and its surroundings can be identified and evaluated. This collection of basic data is generally referred to as an environmental baseline.

21. Each project or activity site will have unique characteristics that must be considered in constructing a baseline. The assembly of a baseline that would be universally applicable is very difficult. At best, it would be a collection of nonexclusive categories containing poorly defined groups that are not internally consistent at the same information level. Clearly, a baseline is site dependent.

22. A list of terms that will serve as the building blocks for a site-dependent baseline is needed. Such a list is provided in Appendix C. An examination of the list shows that the various elements are both qualitative and quantitative and represent basic, general, and derived data. Thus, the list can serve only as a source for the development of concepts that must be translated into terms that are applicable to the site under consideration.

23. The list of environmental baseline elements (Appendix C) is useful for other purposes. Personnel can use the list as a guide for preparing input forms for the EICS as well as for interpreting the output (paragraphs 16, 17, and 19). If an analytical model is required to examine a cause-and-effect relation between an Army activity and an environmental attribute, the list will give some initial direction as to what parameters should be incorporated into the model, even though the discrete parameters of the model may not be identified in the list per se. At a more general level, the list will provide guidance for master planners, personnel involved in environmental quality and resource management, and decision makers at higher headquarters

involved in selecting alternatives and general mission planning.

24. The format of the list was structured around the thirteen CERL technical specialties (Figure 1); however, several of the specialties are so broad in scope that they were divided into two or more subcategories to be more meaningful; further divisions were made, as needed, to introduce key concepts.

PART IV: CATALOG OF ENVIRONMENTAL INFORMATION SOURCES

25. A catalog of currently available environmental information sources has been assembled at WES. This listing provides an invaluable number of information sources for those personnel using the EICS or preparing EIA's and EIS's. The catalog is arranged according to the CERL technical specialties. Some of the specialties are subdivided to narrow the scope of the subject matter (Table 1). Note that the EICS, the list of environmental baseline elements, and the catalog of information sources have a common arrangement of major divisions based on the CERL technical specialties.

Structure of the Catalog

26. When information is needed, numerical data are generally the most desirable because they can be extracted rapidly, and hopefully used without modification, for the purpose intended. However, if numerical data are not readily accessible with available resources, the next course of action is to contact directly an agency having the desired data or to locate an agency having the data through a directory or information service. As a last resort, the data can be collected on site. Following this rationale, the catalog of information sources is arranged into eight informational content types as follows:

Type	Description
1	Numerical information sources
2	Numerical information systems
3	Addresses of information sources
4	Directories of information sources
5	Information sources describing methods to collect data
6	Information sources describing instrumentation used for collecting data
7	General information sources
8	General information systems

27. Type 1 above consists of a list of published documents that contain numerical data and maps from which information can be extracted rapidly. Type 2 is comprised of a list of automated numerical information systems. Access to these systems must generally be obtained via on-site or remote computer facilities or by submitting written or telephone requests to the agency that maintains the system.

28. Type 3 consists of a list of addresses of agencies that can provide information and referrals. Type 4 is comprised of a list of published directories of information sources. Many of these directories have specific addresses (and some telephone numbers) of agencies that can provide numerical information directly or can give referrals to sources of information.

29. Type 5 consists of a listing of published documents specifically related to methods of collecting data, and Type 6 is comprised of a listing of documents describing instrumentation used to collect data.

30. Type 7 consists of a list of published documents, including periodicals, that are of a qualitative or quasiquantitative nature. This group was included in the reference list to aid a person using the EICS or charged with writing an EIA or EIS, who is not familiar with the terminology of a particular problem area. Also, if no numerical data are available, no agencies have the desired information, and data cannot be collected, the information sources in Type 7 can possibly be interpreted to provide needed data from the qualitative descriptions available in the documents in this group. Type 8 is comprised of a list of automated information systems containing information sources of the same type as the published documents included in Type 7. As with Type 2, computer access must be obtained from the agency maintaining the system.

31. The information sources are arranged in 27 environmental categories as shown in Table 1. This arrangement is hereafter referred to as the WES environmental categories. Under each of the environmental categories are the eight informational content types listed in paragraph 26. Hence, there are 216 combinations of environmental categories

and informational content types available for categorizing the information sources.

32. A matrix summary of the information contained in the catalog at this writing is provided in Figures 4, 5, and 6. The information in Figure 4 indicates the number of sources available within each environmental category. Figures 5 and 6 include sources primarily related to domestic (U.S.) and foreign regions, respectively. The row in each matrix is an environmental category, and each column is an informational content type.

Automated Retrieval from the Catalog of Environmental Information Sources

33. WES has developed an automated system for the retrieval of information sources from the catalog that affords the user rapid access to any desired listing of sources. The retrieval program is written in a conversational mode, whereby the user can easily select any list of information sources desired. The user will have the option of limiting the search by selecting categories from either the 13 CERL technical specialties or the WES 27 environmental categories (Table 1) and from the eight informational content types (paragraph 26). After searching the catalog of information sources for the code combinations specified, the automated system will print out a list of the requested sources at the teletype or on a high-speed printer. The automated system will provide an up-to-date listing of information sources quickly and reliably on a teletype terminal anywhere within the contiguous United States. A sample output listing is provided in Figure 7.

Program operation

34. Preliminary preparation. To use the retrieval program, the user needs only a teletype with an audio coupler and a telephone, but access must be authorized by prior arrangement with CERL.* When authority

* Information concerning authorization for use of the system can be obtained by writing: Director, U. S. Army Engineer Construction Engineering Research Laboratory, ATTN: CERLESS, P. O. Box 4005, Champaign, Illinois 61820.

WES Environmental Category**	Informational Content Type*: Numerical Information Sources	Numerical Information Systems	Addresses or Information Sources	Directories of Information Sources	Information Sources Describing Methods to Collect Data	Sources Describing Instrumentation Used for Collecting Data	General Information Sources	General Information Systems
	TOTAL							
Vegetation	106	7	21	24	56	9	233	7
Wildlife	114	6	29	48	12	0	186	8
Environmental Health	138	26	65	36	1	0	83	25
Climatology	224	5	30	28	6	9	109	5
Air Pollution	9	13	27	39	15	14	73	14
Surface Water	149	7	54	41	20	17	192	5
Water Quality	39	14	46	58	29	30	145	13
Groundwater	86	8	15	27	7	6	140	6
Population	320	8	16	32	1	0	93	5
Labor	170	7	24	36	1	0	87	5
Housing	66	6	12	17	2	0	66	5
Social Benefits	91	5	6	13	0	0	67	4
Law Enforcement and Fire Protection	97	7	21	20	0	0	76	8
Education	191	6	32	33	0	0	91	6
Cultural Resources	93	5	19	23	2	0	70	5
Recreation	178	4	15	29	6	0	140	4
Community Organizations	55	5	4	16	1	0	59	5
Communications	186	5	23	23	0	0	68	5
Economics	449	19	89	79	7	0	260	16
Topography	135	6	18	15	27	10	103	6
Soils and Geology	141	6	45	26	74	35	217	7
Land Use	101	14	34	38	16	0	217	12
Noise	9	8	16	21	15	14	45	9
Transportation	272	9	33	43	6	1	199	8
Aesthetics	8	4	8	10	1	0	49	4
Energy Resources	110	17	17	25	3	0	104	16
Public Utilities	121	11	31	28	2	1	101	12

* See paragraph 26.
** See paragraph 31.

Figure 4. Numerical summary of references to information sources available in catalog by informational content type and WES environmental category

Informational Content Type*

WES Environmental Category**	Numerical Information Sources	Numerical Information Systems	Addresses of Information Sources	Directories of Information Sources	Information Sources Describing Methods to Collect Data	Sources Describing Instrumentation Used for Collecting Data	General Information Sources	General Information Systems
	DOMESTIC							
Vegetation	43	6	20	19	47	8	129	6
Wildlife	93	6	28	43	11	0	123	8
Environmental Health	45	21	64	29	1	0	14	20
Climatology	77	5	29	20	5	8	34	5
Air Pollution	6	12	26	36	15	14	66	13
Surface Water	113	7	54	37	19	17	134	5
Water Quality	33	13	45	55	26	27	102	12
Groundwater	77	8	15	25	7	6	103	6
Population	97	8	14	16	1	0	23	5
Labor	60	6	24	28	1	0	17	5
Housing	32	6	12	13	2	0	18	5
Social Benefits	31	4	5	8	0	0	7	4
Law Enforcement and Fire Protection	26	7	20	18	0	0	14	8
Education	74	6	31	25	0	0	18	6
Cultural Resources	32	5	19	15	2	0	9	5
Recreation	132	4	15	22	6	0	101	4
Community Organizations	23	5	4	10	1	0	8	5
Communications	55	5	22	15	0	0	7	5
Economics	201	15	88	56	5	0	160	13
Topography	30	6	18	10	25	9	36	6
Soils and Geology	70	6	43	22	69	34	109	6
Land Use	46	10	34	30	15	0	145	8
Noise	6	7	16	19	15	14	41	8
Transportation	131	8	33	35	6	1	132	7
Aesthetics	6	4	8	8	1	0	9	4
Energy Resources	51	15	17	21	3	0	48	14
Public Utilities	68	10	31	24	2	1	48	11

* See paragraph 26.
** See paragraph 31.

Figure 5. Numerical summary of references to information sources available in catalog (domestic) by informational content type and WES environmental category

Informational Content Type*

WES Environmental Category**	Numerical Information Sources	Numerical Information Systems	Addresses of Information Sources	Directories of Information Sources	Information Sources Describing Methods to Collect Data	Sources Describing Instrumentation Used for Collecting Data	General Information Sources	General Information Systems
	FOREIGN							
Vegetation	63	1	1	5	9	1	104	1
Wildlife	21	0	1	5	1	0	58	0
Environmental Health	93	5	1	7	0	0	69	5
Climatology	147	0	1	8	1	1	75	0
Air Pollution	3	1	1	3	0	0	7	1
Surface Water	36	0	0	4	1	0	58	0
Water Quality	6	1	1	3	3	3	43	1
Groundwater	9	0	0	2	0	0	37	0
Population	223	0	2	16	0	0	70	0
Labor	110	1	0	8	0	0	70	0
Housing	34	0	0	4	0	0	48	0
Social Benefits	60	1	0	5	0	0	60	0
Law Enforcement and Fire Protection	71	0	1	2	0	0	62	0
Education	117	0	1	8	0	0	73	0
Cultural Resources	61	0	0	8	0	0	61	0
Recreation	46	0	0	7	0	0	39	0
Community Organizations	32	0	0	6	0	0	51	0
Communications	131	0	1	8	0	0	61	0
Economics	248	4	1	23	2	0	100	3
Topography	105	0	0	5	2	1	67	0
Soils and Geology	71	0	2	4	5	1	108	1
Land Use	55	4	0	8	1	0	72	4
Noise	3	1	0	2	0	0	4	1
Transportation	141	1	0	8	0	0	67	1
Aesthetics	2	0	0	2	0	0	40	0
Energy Resources	59	2	0	4	0	0	56	2
Public Utilities	53	1	0	4	0	0	53	1

* See paragraph 26.
** See paragraph 31.

Figure 6. Numerical summary of references to information sources available in catalog (foreign) by informational content type and WES environmental category

POPULATION

NUMERICAL INFORMATION SOURCES

ACADEMIEI REPUBLICII SOCIALISTE ROMANIA, ATLASUL REPUBLICII SOCIALISTE ROMANIA (ATLAS OF THE ROMANIAN SOCIALIST REPUBLIC), BUCHAREST, RUMANIA, 1972. *

ADAMS, T.H., AREA HANDBOOK FOR CYPRUS, DEPARTMENT OF THE ARMY PAMPHLET NO.550-22, U.S.GOVERNMENT PRINTING OFFICE, WASHINGTON, D.C., 1964. *

ANONYMOUS, THE ULSTER YEARBOOK, HER MAJESTY'S STATIONARY OFFICE, BELFAST, IRELAND, 1974. *

ARBINGAST, S., ET AL., ATLAS OF TEXAS, UNIVERSITY OF TEXAS PRESS, AUSTIN, 1967.

BIEDERMAN, P., THE ECONOMIC ALMANAC, MACMILLAN, NEW YORK, 1968.

BIGELOW, M.C., ET AL., AREA HANDBOOK OF INDONESIA, DEPARTMENT OF THE ARMY PAMPHLET NO.550-39, U.S.GOVERNMENT PRINTING OFFICE, WASHINGTON, D.C., 1964. *

BIRO PUSAT STATISTIK, STATISTICAL POCKETBOOK OF INDONESIA, DJA KARTA, INDONESIA, 1969. *

BLANCHARD, W.AND LEGTERS, L.H., (TEAM CHAIRMEN), ET AL., U.S.ARMY AREA HANDBOOK FOR BOLIVIA, FOREIGN AREAS STUDIES DIVISION, SPECIAL OPERATIONS RESEARCH OFFICE, THE AMERICAN UNIVERSITY, WASHINGTON, D.C., AUG 1963. *

BLUTSTEIN, H.I., ET AL., AREA HANDBOOK FOR COSTA RICA, DEPARTMENT OF THE ARMY PAMPHLET NO.550-90. U.S.GOVERNMENT PRINTING OFFICE, WASHINGTON, D.C., OCT 1970. *

BOGUE, D.AND BEALE, C., ECONOMIC AREAS OF THE UNITED STATES, FREE PRESS OF GLENCOE, NEW YORK, 1961.

BORCHERT, J.AND YAEGER, D., ATLAS OF MINNESOTA RESOURCES AND SETTLEMENT, MINNESOTA STATE PLANNING AGENCY, ST.PAUL, 1969.

BRITTINGHAM, G.R., THE PENNSYLVANIA MANUAL, DEPARTMENT OF PROPERTY AND SUPPLIES, COMMONWEALTH OF PENNSYLVANIA, HARRISBURG, 1971.

BROOKS, J., THE OREGON ALMANAC AND BOOK OF FACTS, BINFORD AND MORT, PORTLAND, 1961.

BRYANT, W., STATISTICAL ABSTRACT OF OHIO-1969, DEVELOPMENT DEPARTMENT, STATE OF OHIO, COLUMBUS, 1969.

BUREAU DE LA STATISTIQUE DU QUEBEC, ANNUAIRE DU QUEBEC (YEARBOOK OF QUEBEC), QUEBEC, CANADA, 1973. *

BUREAU FEDERAL DE STATISTIQUE, ANNUAIRE STATISTIQUE DE LA SUESSE (STATISTICAL YEARBOOK OF SWITZERLAND), BERN, SWITZERLAND, 1968. *

BUREAU OF STATISTICS, ANNUAL STATISTICAL ABSTRACT-1969, SUVA, FIJI, 1969. *

* INFORMATION SOURCE PRIMARILY REFERENCES DATA FOR LOCATIONS OUTSIDE THE UNITED STATES

Figure 7. Sample listing of information sources

for use of the system has been granted, the requestor will be assigned a telephone number, a user number, and a password. All output, unless requested otherwise, will be printed out at the teletype. Prior to accessing the program, the user should be familiar with the procedures for operating the WES G-635 computer in the time-sharing mode (paragraphs 44-47).

35. Program access and start. Once a telephone number, user number, and password have been assigned, and the user has a good knowledge of the program capabilities, then the telephone number must be dialed to attain a carrier signal from the WES computer. The computer will initiate a "conversation" with the user, asking for his under number (USER ID) and password. After each entry by the user, the carriage return key (RTN) must be depressed. The user is allowed two tries to type in both the user number and password properly. If the user fails to enter the proper user number or password, the computer will sign off with either ILLEGAL ID or ILLEGAL PASSWORD. If this occurs, the user must dial the telephone number for the carrier signal and try again.

36. Once the user has entered the proper user number and password, the computer will ask: SYSTEM?. The retrieval program is written in FORTRAN, and a compiled copy is stored under the file name RPIS1. The user must tell the computer that the program is in FORTRAN; because the program is already compiled in a random file, it cannot be accessed directly as an old file, so the computer must be told that the user wants to enter a new file. The user can accomplish this on one line by typing FORT N for FORTRAN subsystem and a new file. The computer will acknowledge this request with: READY and an asterisk. If FORT N is incorrectly entered, the computer will respond with 009-SYSTEM UNKNOWN and will ask again for the system until it is properly entered.

37. When the computer has responded with READY, the user may initiate the retrieval program by simply entering: RUN RPIS1. After a few seconds, the program will start operation with the initial message: I AM RPIS, THE RETRIEVAL PROGRAM FOR INFORMATION SOURCES..., (Figure 8). If the program name is incorrectly entered, the computer will respond

```
//////////////////////////////\\\\\\\\\\\\\\\\\\\\\\\\\\
I AM RPIS, THE RETRIEVAL PROGRAM FOR INFORMATION
SOURCES THAT IS USEFUL FOR LOCATING DATA ON
ELEMENTS THAT MAKE UP AN ENVIRONMENTAL BASELINE
AND WILL BE HELPFUL TO YOU IN PREPARING
ENVIRONMENTAL IMPACT ASSESSMENTS AND STATEMENTS.
\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\//////////////////////////

PLEASE FOLLOW THE INSTRUCTIONS AS THEY APPEAR ON YOUR
TELETYPE AND SUPPLY ME WITH ENOUGH INFORMATION TO LET
ME KNOW WHAT YOU WANT.

THE INFORMATION SOURCES ARE CATEGORIZED BOTH ACCORDING
TO THE CONSTRUCTION ENGINEERING RESEARCH LAB'S (CERL)
TECHNICAL SPECIALTIES AND THE WATERWAYS EXPERIMENT
STATION'S (WES) ENVIRONMENTAL CATEGORIES. YOU MUST
RESTRICT MY SEARCH TO ONE OR MORE OF THE CERL SPECIALTIES
OR WES CATEGORIES. IF YOU WANT ME TO PROVIDE YOU WITH
LISTS OF THOSE SPECIALTIES AND CATEGORIES AND THE RELATION
BETWEEN THEM, PLEASE INPUT THE NUMBER 1. INPUT A ZERO(0)
(DO NOT USE THE ALPHABETIC CHARACTER O) IF YOU DON'T WANT
THE LISTS. WHEN THE = SIGN APPEARS, TYPE 1 OR 0 AND THEN
DEPRESS THE RETURN KEY.
=1

---------------------------------------------------------
            CERL                         WES
------------------------- -------------------------------
         TECHNICAL                 ENVIRONMENTAL
CODE    SPECIALTIES        CODE     CATEGORIES
---- -------------------- ---- --------------------------
  1  ECOLOGY                1  VEGETATION
                            2  WILDLIFE

  2  ENVIRONMENTAL HEALTH   3  ENVIRONMENTAL HEALTH

  3  AIR QUALITY            4  CLIMATOLOGY
                            5  AIR POLLUTION

  4  SURFACE WATER          6  SURFACE WATER HYDROLOGY
                            7  WATER QUALITY

  5  GROUNDWATER            8  GROUNDWATER

  6  SOCIOLOGY              9  POPULATION
                           10  LABOR
                           11  HOUSING
                           12  SOCIAL BENEFITS
                           13  LAW ENFORCEMENT AND
                               FIRE PROTECTION
                           14  EDUCATION
                           15  CULTURAL RESOURCES
                           16  RECREATION
                           17  COMMUNITY ORGANIZATIONS
                           18  COMMUNICATIONS

  7  ECONOMICS             19  ECONOMICS

  8  EARTH SCIENCE         20  TOPOGRAPHY
                           21  SOILS AND GEOLOGY

  9  LAND USE              22  LAND USE

 10  NOISE                 23  NOISE

 11  TRANSPORTATION        24  TRANSPORTATION

 12  AESTHETICS            25  AESTHETICS

 13  ENERGY AND RESOURCE   26  ENERGY RESOURCES
     CONSERVATION          27  PUBLIC UTILITIES
---------------------------------------------------------

WHICH CATEGORY SYSTEM (CERL=1, WES=2) DO YOU WANT TO USE
IN THE RETRIEVAL OF THE INFORMATION SOURCES? WHEN THE =
SIGN APPEARS, TYPE 1 OR 2 AND THEN DEPRESS THE RETURN KEY.
=2
FOR WHICH CATEGORIES OR SPECIALTIES DO YOU WANT INFORMATION
SOURCES? (USE THE CODE NUMBERS FOR THE CATEGORY SYSTEM YOU
CHOSE) EACH TIME THE = SIGN APPEARS, INPUT A CODE NUMBER
AND DEPRESS THE RETURN KEY. INPUT A ZERO AFTER YOU ARE FINISHED
CHOOSING CATEGORIES. INPUT A ZERO AFTER THE FIRST = SIGN IF
YOU WANT ALL CATEGORIES. INPUT -1 IF YOU DON'T KNOW THE
CODE NUMBERS.
=9
=0
THE INFORMATION SOURCES FOR EACH CATEGORY ARE GROUPED
ACCORDING TO THE TYPE OF INFORMATIONAL CONTENT
CONTAINED IN THE SOURCE. DO YOU WANT A LIST OF
THOSE TYPES(1) OR NOT(0)? WHEN THE = SIGN APPEARS,
TYPE 1 OR 0 AND DEPRESS THE RETURN KEY.
=1

-----------------------------------------
CODE   TYPES OF INFORMATIONAL CONTENT
---- ------------------------------------
  1  NUMERICAL INFORMATION SOURCES
  2  NUMERICAL INFORMATION SYSTEMS
  3  ADDRESSES OF INFORMATION SOURCES
  4  DIRECTORIES OF INFORMATION SOURCES
  5  INFORMATION SOURCES DESCRIBING
        METHODS TO COLLECT DATA
  6  INFORMATION SOURCES FOR DATA
        COLLECTION INSTRUMENTATION
  7  GENERAL INFORMATION SOURCES
  8  GENERAL INFORMATION SYSTEMS
-----------------------------------------

I'LL READ BACK THE SPECIALTIES OR CATEGORIES FOR WHICH
YOU REQUESTED INFORMATION SOURCES. AFTER EACH SPECIALTY
OR CATEGORY NAME APPEARS, YOU WILL HAVE A CHANCE TO
SPECIFY THE TYPES OF INFORMATIONAL CONTENT YOU WANT ME
TO RETRIEVE FROM THE INFORMATION SOURCES. EACH TIME
THE = SIGN APPEARS, INPUT A CODE NUMBER FROM 1 TO 8
AND DEPRESS THE RETURN KEY. INPUT A ZERO WHEN YOU ARE
FINISHED SPECIFYING CODE NUMBERS FOR EACH SPECIALTY OR
CATEGORY. INPUT A ZERO AFTER THE FIRST = SIGN IF YOU
WANT ALL TYPES OF INFORMATION FOR A SPECIALTY OR
CATEGORY. INPUT -1 IF YOU DON'T KNOW THE CODES.

WES ENVIRONMENTAL CATEGORIES
----------------------------
 9 POPULATION
=1
=0

THE SOURCES ARE CLASSIFIED ACCORDING TO WHETHER THE INFORMATION
IS PRIMARILY ABOUT A U.S. OR FOREIGN REGION. DO YOU WANT THE
SOURCES WITH INFORMATION FOR THE U.S.(1) OR FOREIGN(2) REGIONS
OR BOTH(3)? WHEN THE = SIGN APPEARS, TYPE 1, 2, OR 3 AND
DEPRESS THE RETURN KEY.
=3

I WAS ABLE TO LOCATE  320 INFORMATION SOURCES FOR YOU.
DO YOU WANT THE RETRIEVED INFORMATION SOURCES ON THE
TELETYPE(1) OR WRITTEN ONTO A FILE(2) THAT YOU CAN LIST
ON THE TELETYPE OR DUMP ON THE HIGH-SPEED PRINTER? WHEN
THE = SIGN APPEARS, TYPE 1 OR 2 AND DEPRESS THE RETURN KEY.
=2

FOR IDENTIFICATION PURPOSES, I NEED TO KNOW YOUR NAME AND
MAILING ADDRESS. WHEN THE = SIGN APPEARS, TYPE YOUR FULL
NAME AND DEPRESS THE RETURN KEY. WHEN THE = SIGN APPEARS AGAIN,
TYPE YOUR MAILING ADDRESS(INCLUDE STREET NAME AND NUMBER
OR EQUIVALENT, CITY, STATE, AND ZIP CODE ALL ON THE SAME LINE)
AND THEN DEPRESS THE RETURN KEY.
=MARSHALL RILEY WEATHERSBY
=WESFE, P.O. BOX 631, VICKSBURG, MS. 39180
----------------------------------------------------------------
----------------------------------------------------------------
THE RETRIEVED INFORMATION SOURCES ARE LISTED
ON A FILE WHOSE NAME IS REFRNCES
----------------------------------------------------------------
----------------------------------------------------------------

DO YOU NEED INFORMATION ON HOW TO HAVE THE FILE DUMPED
ON THE HIGH-SPEED PRINTER(1) OR NOT(2)? WHEN THE = SIGN
APPEARS, TYPE 1 OR 2 AND THEN DEPRESS THE RETURN KEY.
=1

THE FOLLOWING IS A STEP BY STEP OUTLINE OF HOW TO HAVE
THE FILE REFRNCES DUMPED ON THE HIGH-SPEED PRINTER:

STEP COMPUTER RESPONSE              YOUR RESPONSE
---- --------------------------    --------------------------------
  1  *                              BPRINT REFRNCES   (RETURN KEY)
  2  IDENT                          R0FT011,RPIS      (RETURN KEY)
  3  LABELS?                        (RETURN KEY)
  4  TAB CHARACTERS AND SETTING?    (RETURN KEY)
  5  SNUMB # XXXXT

AFTER THE SNUMB NUMBER HAS BEEN ASSIGNED, THE COMPUTER WILL
AGAIN RESPOND WITH AN ASTERISK OR *. IF YOU ARE FINISHED
WITH THE SYSTEM, TYPE BYE AND DEPRESS THE RETURN KEY. THE
COMPUTER WILL THEN SIGN OFF.

*
```

Figure 8. Sample computer output showing access of catalog of environmental information sources using RPIS

with: <50> FILE (Incorrect entry) --NON EXISTENT FILE--. In this case, the user must retype the run command: RUN RPIS1.

38. Program operation and output. The retrieval program is written in a conversational mode and asks for periodic entries from the user so that he can obtain the desired information sources. Generalized and detailed flowcharts of the retrieval program are provided for the user in Figures 9 and 10. Careful inspection of Figure 10 will aid the user in knowing what information will be required to run the program and what alternatives are available to him during the program operation.

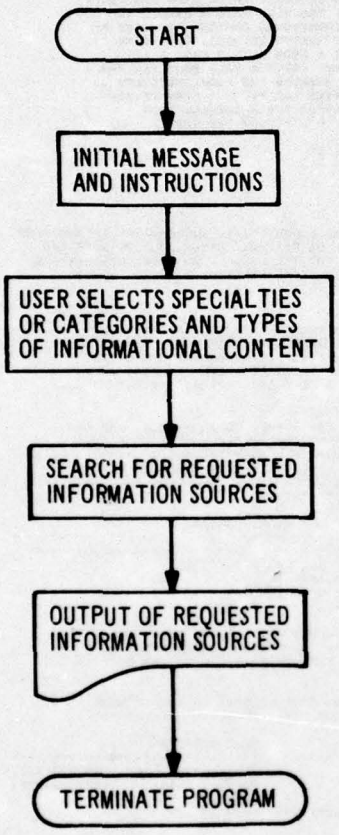

Figure 9. Generalized flow diagram of RPIS

39. After the user has entered code numbers for locating the desired lists of information sources, he may have to wait a few minutes, depending on how busy the computer is at the time. Once the search is finished, the program will respond with: I WAS ABLE TO LOCATE XXXX INFORMATION SOURCES FOR YOU. With the knowledge of how many information sources were located, the user is asked to choose between having the lists typed on the teletype or written onto a file that can be dumped on a high-speed printer. If the program finds a large number of sources for the user (greater than 50), clearly the high-speed printer is the desired alternative. If this alternative is chosen, complete step-by-step instructions are included in the program on how to have the file dumped. The lists dumped on the high-speed printer will be mailed to the user at the address he enters during the operation of the program. If the user decides to have the file dumped on the high-speed printer, he should do so immediately after the program terminates to insure that the file in which the requested information sources is written will not be destroyed.

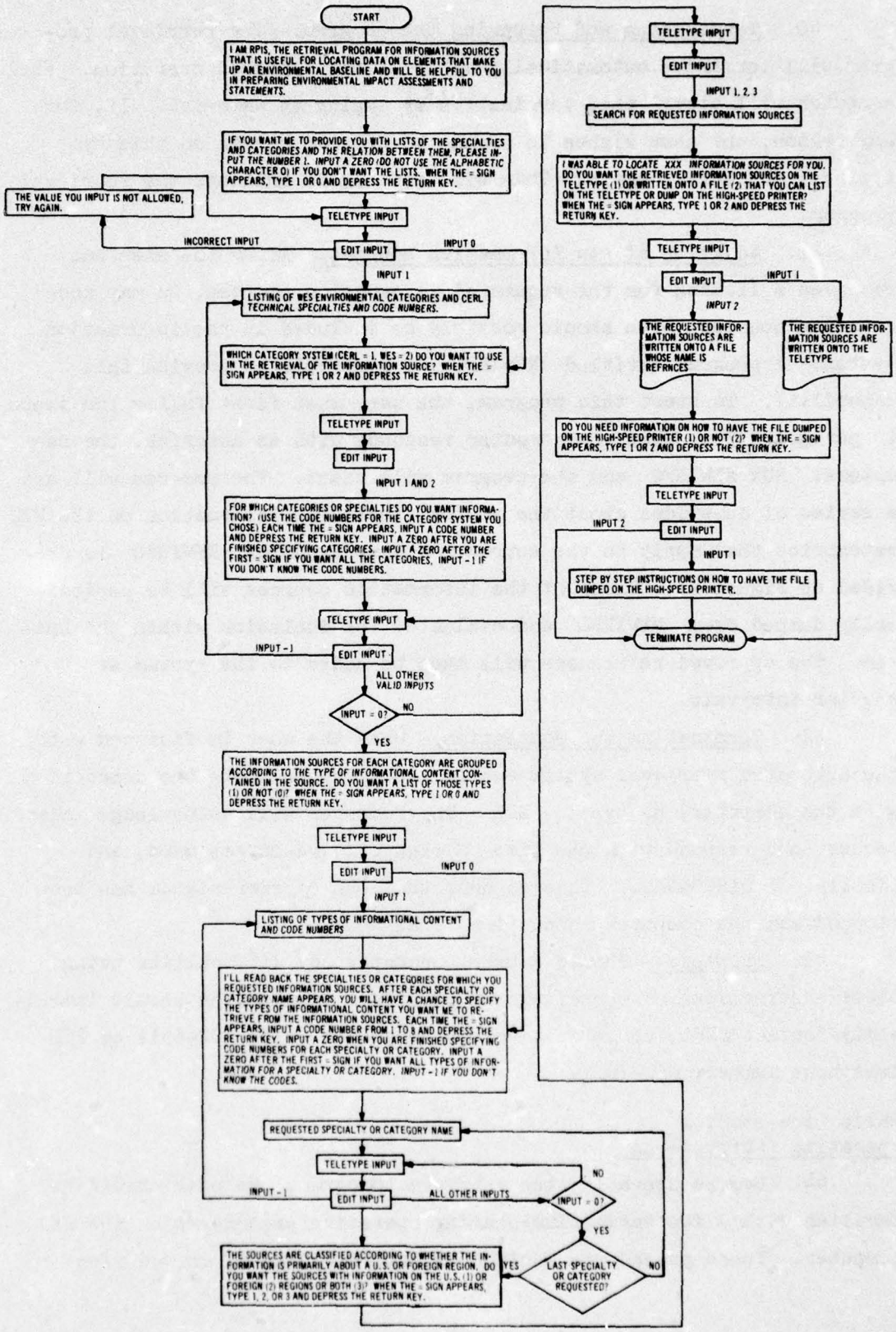

Figure 10. Detailed flow diagram of RPIS

40. Terminating and rerunning the program. The retrieval program will terminate automatically after it has finished operation. The computer will signal this termination by typing an asterisk. If, for any reason, the user wishes to rerun the program he may do this by typing: RUN RPIS1 again. This will once again initiate the retrieval program.

41. Addition of new information sources. After the user has received a listing for the requested information sources, he may know of other sources which should possibly be included in the information system. A program entitled NEWINFO is available to provide this capability. To start this program, the user must first follow the steps in paragraph 37. When the computer responds with an asterisk, the user enters: RUN NEWINFO and the program will start. The program will ask a series of questions about the source, including information on the WES categories that apply to the source. A sample run of NEWINFO is provided as Figure 11. Lists of the information sources will be periodically dumped from NEWINFO and evaluated for inclusion within the system. The approved references will then be added to the system at regular intervals.

42. Terminating the connection. When the user is finished with the automated retrieval system and is ready to terminate the connection with the computer, he types: BYE. The computer will acknowledge this request and respond with the time of sign off, resources used, and finally CP DISCONNECT. This signals that the carrier signal has been stopped and the computer connection terminated.

43. Problems. Should a user encounter any difficulties using these instructions or operating the retrieval program, he should immediately contact CERL, commercial telephone number (217) 352-6511 or FTS telephone number, 958-7011.

Basic time-sharing
operating instructions

44. Before operating the retrieval program, the user should be familiar with a few basic time-sharing operating procedures on the WES computer. These procedures include an understanding of the carriage

```
I AM NEWINFO, THE PROGRAM WHICH CAN BE USED TO BRING
MISSING INFORMATION SOURCES TO CERL ATTENTION.

PLEASE FOLLOW THE INSTRUCTIONS CAREFULLY. I WILL
ASK YOU A SERIES OF QUESTIONS ABOUT THE INFORMATION
SOURCE YOU WISH TO ADD. AFTER EACH = SIGN APPEARS,
TYPE THE REQUESTED INFORMATION AND DEPRESS THE
RETURN KEY. IF THE REQUEST DOES NOT APPLY TO THE
INFORMATION SOURCE, THEN TYPE 'NONE' OR 'NOT
APPLICABLE', BUT BE SURE TO PROVIDE SOME ANSWER
FOR ALL QUESTIONS.

AUTHOR'S NAME? (IF UNKNOWN, SO STATE)
=NEVILLE, A.M., KENNEDY, J.B.
TITLE?
=BASIC STATISTICAL METHODS
PUBLISHER?
=INTERNATIONAL TEXTBOOK COMPANY
DATE?
=1968
REPORT, AD, OR NTIS NUMBER?
=NONE
PERIODICAL? (YES OR NO) IF YES, TYPE IN HOW OFTEN
IT IS PUBLISHED IF YOU KNOW.
=NO
TYPE IN THE WES CATEGORY NUMBERS WHICH APPLY TO THE
INFORMATION SOURCE. SEPARATE THESE NUMBERS WITH COMMAS.
=13,14,15,16,17,18,19

ARE THERE ANY MORE INFORMATION SOURCES WHICH NEED TO BE
ADDED(1) OR NOT(0)? WHEN THE = SIGN APPEARS, TYPE 1 OR 0
AND DEPRESS THE RETURN KEY.
=1

AUTHOR'S NAME? (IF UNKNOWN, SO STATE)
=NONE
TITLE?
=TREES: THE YEARBOOK OF AGRICULTURE
PUBLISHER?
=U.S.GOVERNMENT PRINTING OFFICE
DATE?
=1949
REPORT, AD, OR NTIS NUMBER?
=UNKNOWN
PERIODICAL? (YES OR NO) IF YES, TYPE IN HOW OFTEN
IT IS PUBLISHED IF YOU KNOW.
=NO
TYPE IN THE WES CATEGORY NUMBERS WHICH APPLY TO THE
INFORMATION SOURCE. SEPARATE THESE NUMBERS WITH COMMAS.
=2,24,25,26,27

ARE THERE ANY MORE INFORMATION SOURCES WHICH NEED TO BE
ADDED(1) OR NOT(0)? WHEN THE = SIGN APPEARS, TYPE 1 OR 0
AND DEPRESS THE RETURN KEY.
=0
```

Figure 11. Sample run of NEWINFO

return key, what the user should do in case of input errors, interrupting the program, and the busy file message.

45. Carriage return. After each input by the user, the carriage return key (RTN or RETURN) must be depressed to let the computer know that you have finished entering data. This applies to all entries by the user. Striking the RTN or RETURN key returns system control to the computer, and the program will not proceed until this is done.

46. User errors. Typing errors by the user sometimes occur. Below are three cases to consider:

a. If an error by the user is recognized prior to carriage return, he may use either the correction symbol @ or the control X sequence. The correction or eliminator symbol may be used to eliminate any number of characters starting with the character farthest right on the line. For example: 1@0 will be read by the computer as 0; whereas, SMOTH@@@ITH will be read SMITH. The control X sequence allows the user to start from scratch on a new line. To achieve this, the user must strike the CTRL (sometimes CTL) key, and simultaneously hit the X key. The computer will respond with DEL and space to the next line and await your new line.

b. Some editing of user inputs is done by the retrieval program. If an incorrect input is detected, the program will request a corrected input from the user. For example, if the computer requests an input of either 1, 2, or 3, and the user mistakenly inputs a 4, the computer will respond with: THE VALUE YOU INPUT IS NOT ALLOWED. PLEASE TRY AGAIN. The user may then input the proper response and the program continues.

c. If the user decides, during the operation of the program, that the restrictions he placed on the search are incorrect, the program must be stopped and restarted. This is done by striking the BREAK or BRK key, and when the computer responds with an asterisk, the program can be restarted.

47. Busy file message. If two users try to access and run the retrieval program simultaneously, only one will succeed (the one who types RUN RPIS1 first). When the other user types in RUN RPIS1, the computer will respond with: <50> FILE RPIS1 --FILE BUSY. If this message occurs, the user should wait a few minutes and try again.

Normal operation of the program should take no more than 15 min. If the user does not wish to wait, he may terminate the connection and try again later by signing on again.

REFERENCES

1. LaGarde, V. E. et al., "Selected Legally Protected Animals, Inventory for Use by United States Army Installations and Major Activities in the Continental United States," Technical Report M-75-2, Report 1, Jun 1975, U. S. Army Engineer Waterways Experiment Station, CE, Vicksburg, Miss.

2. Rekas, A. M. B. et al., "Selected Legally Protected Animals, Inventory for Use by Corps of Engineers Division and District Offices in the Contiguous United States," Technical Report M-75-2, Report 2, Jun 1975, U. S. Army Engineer Waterways Experiment Station, CE, Vicksburg, Miss.

3. Jain, R. K., Urban, L. V., and Stacey, G. S., "Handbook for Environmental Impact Analysis," Technical Report E-59, Sep 1974, Construction Engineering Research Laboratory, Champaign, Ill.

4. Headquarters, Department of the Army, "Environmental Considerations in DA Actions," Army Regulation 200-1, Sep 1974, U. S. Government Printing Office, Washington, D. C.

5. Jain, R. K., "Computer-Aided Environmental Impact Study," Sep 1974, Construction Engineering Research Laboratory, Champaign, Ill.

6. Urban, L. V. et al., "Computer-Aided Environmental Impact Analysis for Construction Activities: User Manual," Technical Report E-50, Mar 1975, Construction Engineering Research Laboratory, Champaign, Ill.

7. Reggins, R. E. and Novak, E., "Computer-Aided Environmental Impact Analysis for Mission Change, Operations and Maintenance, and Training: User Manual," Technical Report E-85, Feb 1976, Construction Engineering Research Laboratory, Champaign, Ill.

8. Novak, E. et al., "Computer-Aided Environmental Impact Analysis for Industrial Activities, Procurement, Research, Development, Testing, and Evaluation: User Manual" (In preparation), Construction Engineering Research Laboratory, Champaign, Ill.

9. Fitipaldi, J., "Computer-Aided Environmental Impact Analysis for Administration and Support and Real Estate Acquisition or Outlease of Land: User Manual" (In preparation), Construction Engineering Research Laboratory, Champaign, Ill.

10. Reggins, R. E, "Environmental Impact Computer System Attribute Descriptor Package," Technical Report E-86, Apr 1976, Construction Engineering Research Laboratory, Champaign, Ill.

11. Executive Office of the President, Council on Environmental Quality, "102 Monitor," Monthly, U. S. Government Printing Office, Washington, D. C.

12. Executive Office of the President, Bureau of the Budget, "Budget Circular No. A-95," Irregular, U. S. Government Printing Office, Washington, D. C.

Table 1

Structure of Catalog of Environmental Information Sources

CERL Technical Specialties	WES Environmental Categories
Ecology	Vegetation Wildlife
Environmental Health	Environmental Health
Air Quality	Climatology Air Pollution
Surface Water	Surface-Water Hydrology Water Quality
Groundwater	Groundwater
Sociology	Population Labor Housing Social Benefits Law Enforcement and Fire Protection Education Cultural Resources Recreation Community Organizations Communications
Economics	Economics
Earth Science	Topography Soils and Geology
Land Use	Land Use
Noise	Noise
Transportation	Transportation
Aesthetics	Aesthetics
Energy and Resource Conservation	Energy Resources Public Utilities

APPENDIX A: LISTING OF ENVIRONMENTAL IMPACT STATEMENTS PREPARED FOR MILITARY INSTALLATIONS

The following is a list of Environmental Impact Statements (EIS's) compiled for military installations as of 20 May 1976 from a list furnished by the Council on Environmental Quality (CEQ) and the Environmental Law Institute (ELI). Copies of specific EIS's published prior to March 1974 are not available from CEQ but can be obtained from the National Technical Information Service (NTIS) (5285 Port Royal Road, Springfield, Virginia 22151). Documents published after this date can be secured from ELI Document Service. CEQ will provide ELI accession numbers and NTIS order numbers for specific EIS's on request.

Status	Statement Title	CEQ/ELI Accession Number	Date Filed With CEQ	NTIS Order Number
	Department of Defense, Air Force			
DRAFT	Norton AFB, San Bernardino	41515	10-02-74	(None)
	AWACS Beddown at Tinker AFB	60596	04-22-76	(None)
FINAL	Luke Air Force Base	10400	10-30-70	(None)
	Helicopter Training, Hill AFB	21151	11-05-71	PB-198 764-F
	Arnold Engineering Development Center	24427	05-11-72	PB-203 238-F
	Tyndall Air Force Base	25015	08-01-72	EIS 72 5015F
	Elgin Air Force Base	25286	09-18-72	EIS 72 5286F
	Shaw Air Force Base	30023	01-04-73	EIS 73 0023F
	Runway Extension, Keesler AFB	30591	04-06-73	EIS 73 0591F
	Air Force Accounting Center, Lowry AFB	32014	12-26-73	EIS 73 2014F
	F-15 Beddown, Luke AFB, Arizona	41246	08-01-74	(None)
	Housing Units, Eglin AFB	41521	10-04-74	(None)
	F-15 Beddown, Langley AFB	50969	07-03-75	(None)
	Department of Defense, Army			
DRAFT	TDS, Toole Army Depot	20683	08-31-71	PB-202 308-D
	South Approach, Golden Gate Bridge, Presidio	30691	08-30-73	(None)
	Land Acquisition, Ft. Carson	41408	09-06-74	(None)

(Continued)

Status	Statement Title	CEQ/ELI Accession Number	Date Filed With CEQ	NTIS Order Number
	Department of Defense, Army (Continued)			
DRAFT	Blackbird Control, Army Installations (Supplement)	51359	09-10-75	(None)
	Mississippi Army Ammunition Plant	51389	09-16-75	(None)
	Ft. Belvoir Housing Project	51429	09-22-75	(None)
FINAL	Operation Red Hat, Johnson Island	10403	12-31-70	(None)
	Disposal of Agents and Weapons, Pine Bluff Arsenal	11800	04-30-71	(None)
	Project EAGLE, Rocky Mountain Arsenal	20030	07-02-71	PB-200 540-F
	Walter Reed General Hospital	20751	09-03-71	PB-199 314-F
	Air Cavalry Facilities, Fort Hood	21414	12-08-71	PB-202 796-F
	Airfield Complex, Fort Campbell	21934	02-16-72	PB-202 761-F
	Diamond Laboratories	24449	05-11-72	PB-199 313-F
	Project DIAMOND ORE, Fort Peck	25068	08-11-72	EIS 72 5068F
	Fort Detrick	25104	08-17-72	EIS 72 5104F
	Fort Debussy	25260	09-13-72	EIS 72 5260F
	Armed Forces Reserve Center	30176	02-02-73	EIS 73 0176F
	Blackbird Control, Army Installations	50117	01-27-75	(None)
	Parachute Drop Zone, Fort Richardson	50401	03-27-75	(None)
	Rehabilitation of Enewetak Atoll, Marshall Islands	50580	04-16-75	(None)
	Aliamanu Military Reservation, Family Housing Project	50587	04-18-75	(None)
	White Sands Missile Range	60323	03-05-76	(None)
	Department of Defense, Navy			
DRAFT	Underwater Demolition, Culebra	10404	12-28-70	(None)
	Defense Office Buildings, Bolling, AFB	10409	04-23-71	(None)
	Solla Bay, Guam, Ammunition Pier	10602	08-26-71	PB-202 138-D
	Naval Submarine Base, New London (1)	24176	04-10-72	PB-208 175-D

(Continued)

Status	Statement Title	CEQ/ELI Accession Number	Date Filed With CEQ	NTIS Order Number
	Department of Defense, Navy (Continued)			
DRAFT	Newport Naval Station	24404	05-09-72	PB-208 959-D
	Marine Corps Supply Center, Barstow	26007	09-14-72	EIS 72 5265D
	Sanitary Landfill, Naval Torpedo Station	30487	03-22-73	EIS 73 0487D
	Atlantic Fleet Weapons Range	30752	05-03-73	EIS 73 0752D
	Air Combat Maneuvering Range (ACMR)	30994	07-14-73	EIS 73 0994D
	Submarine Base, New London Supplement	31409	08-27-73	EIS 73 1409D
	CRV Use, Mirror Lake Weapons Center	31411	08-27-73	EIS 73 1411D
	Naval Submarine Base, Groton, Connecticut	41021	06-20-74	(None)
	Navy Family Housing, Fort Sheridan, Illinois	41047	06-25-74	(None)
	NAS Miramar, Restrictive Use Easements	51404	09-19-75	(None)
	USN Air Station Sanitary Landfill, San Diego	60329	03-08-76	(None)
	Indian Island Annex, NTS Keyport	60412	03-22-76	(None)
	TRIDENT Support Site, Bangor (Supplement)	60542	04-13-76	(None)
	U. S. Naval Submarine Base, New London (Supplement)	60597	04-23-76	(None)
FINAL	Land Acquisition, Naval Security Group, Homestead	20675	08-30-71	PB-202 334-F
	Land Acquisition, New London Submarine Base	20796	09-14-71	PB-198 690-F
	Kahoolawe Island Target Complex	21956	02-23-72	PB-203 876-F
	Land Acquisition, Naval Air Station, LeMore	22035	03-02-72	PB-199 018-F
	Land Acquisition, Naval Station, Norfolk	24014	03-22-72	PB-201 855-F
	Atlantic Fleet Weapons Range, Cross Cay	24051	03-29-72	PB-206 051-F
	Fort McArthur	25597	11-09-72	EIS 72 5597F
	Pinecastle Electronic Warfare Complex	31036	06-20-73	EIS 73 1036F

(Continued)

Status	Statement Title	CEQ/ELI Accession Number	Date Filed With CEQ	NTIS Order Number
	Department of Defense, Navy (Continued)			
FINAL	Multi-Purpose Target Range, Meridian	31190	07-18-73	EIS 73 1190F
	Rolling/Anacostia Base Development	31241	07-23-73	EIS 73 1241F
	Argus Island (Tower) Facility, Bermuda	31898	12-06-73	EIS 73 1898F
	TRIDENT Wharf and Turning Basin, Port Canaveral	40071	01-09-74	EIS 74 0071F
	U. S. Naval Submarine Base, New London	40077	01-09-74	EIS 74 0077F
	Naval Ammunition Depot, Oahu	40318	02-28-74	(None)
	Navy Family Housing Construction	40446	03-25-74	(None)
	Bomb Loading Plant Modernization, McAlester	40649	04-24-74	(None)
	Air Combat Maneuvering Range (ACMR) (2)	41120	07-08-74	(None)
	TRIDENT Support Site, Bangor, Washington	41180	07-19-74	(None)
	Naval Air Station, Miramar	41377	08-26-74	(None)
	Proposed Pier 7, San Diego Naval Station	41693	11-11-74	(None)
	Uniformed Services University of Health Sciences	50161	02-03-75	(None)
	Norfolk Naval Station	50202	02-11-75	(None)
	Parallon de Medinilla Bombardment Range, Mariana I	50292	03-03-75	(None)
	Navy Family Housing Charleston, S. C.	50421	03-26-75	(None)
	Outlying Helicopter Fields, Whiting Field	50422	03-26-75	(None)
	Naval Oceanographic Center, Bay St. Louis	50779	05-30-75	(None)
	Ammunition Facility Naval Air Station, N. Island	51105	07-28-75	(None)
	Naval Personnel Administration Complex, Belle Chasse	51431	09-23-75	(None)
	ORV Recreation, Naval Weapons Center, China Lake	51601	11-03-75	EIS 73 1411D
	Military Housing, Ft. Story, Virginia Beach	51266	08-22-75	(None)

(Continued)

Status	Statement Title	CEQ/ELI Accession Number	Date Filed With CEQ	NTIS Order Number
	General Services Administration			
DRAFT	Fort Riley Military Reservation	10304	11-27-70	(None)
	Camp Adair Air Force Station	10307	03-02-71	(None)
	Army Strategic Communications Command	10308	03-02-71	(None)
	Army Strategic Communications Command, Supplement	10309	03-04-71	(None)
	Naval Weapons Industrial Reserve Plant	10319	06-16-71	PB-200 006-D
	Blythe Island Military Reservation	20236	07-22-71	PB-201 244-D
	Camp Parks Disposal	10908	09-29-71	PB-202 977-D
	Fort Custer Military Reservation	11156	11-04-71	PB-203 884-D
	Disposal of Portion, Camp Elliot, San Diego	50765	05-27-75	(None)
FINAL	Sweetwater Air Force Station	10722	05-28-71	PB-199 447-F
	Missouri Valley National Guard Facility	20059	06-30-71	PB-198 865-F
	Camp Elliott, San Diego	20336	07-30-71	PB-201 493-F
	Disposal of Red Bluff Air Force Station	20480	08-13-71	PB-198 830-F
	AEC Argonne National Laboratory	20513	08-17-71	PB-201 871-F
	Fort Snelling Hospital Reservation	20529	08-18-71	PB-200 786-F
	Sewart Air Force Base Disposal	20771	09-23-71	PB-202 602-F
	NIKE Batteries LA-70 and LA-73	20969	10-12-71	PB-198 886-F
	Los Alamitos Naval Air Station	21004	10-06-71	PB-199 459-F
	Bakalar Air Force Base	21199	11-10-71	PB-202 792-F
	Niagara Falls Army Chemicals Plant	21237	11-19-71	P-200 395-F
	Camp San Luis Obispo	21328	12-03-71	PB-201 525-F
	AEC Argonne National Laboratory (2)	21335	12-03-71	PB-204 556-F
	Fort Lawton Military Reservation	21350	12-06-71	PB-201 526-F
	Philadelphia Army Supply Base	21462	12-17-71	PB-203 886-F

(Continued)

Status	Statement Title	CEQ/ELI Accession Number	Date Filed With CEQ	NTIS Order Number
	General Services Administration (Continued)			
FINAL	Caven Point Army Reserve Center	21545	01-03-72	PB-201 255-F
	Birdshore Army Tank	21772	02-01-72	PB-204 098-F
	Condon Air Force Station	21843	02-11-72	PB-203 885-F
	Cleveland Army Tank Testing Site	24170	04-10-72	PB-204 562-F
	Fort Des Moines	24245	04-21-72	PB-205 446-F
	Camp Parks Sewage Plant, Pleasanton	24919	07-21-72	EIS 72 4919F
	AEC Argonne National Laboratory (3)	25356	09-26-72	EIS 72 5356F
	Mitchell Air Force Base	25613	11-10-72	EIS 72 5613F
	Fort Custer Air Force Station	32009	12-26-73	EIS 73 2009F
	Sand Point Naval Air Station, Seattle	40979	06-17-74	(None)
	Richmond Naval Air Station	41360	08-28-74	(None)
	Disposal of Travis AFB Defense Area, California	41456	09-19-74	(None)
	Oxnard AFB, Camarillo, California	41845	12-09-74	(None)
	Naval Supply Center, Seattle, Disposal	50312	03-04-75	(None)
	Alabama Army Ammunition Plant Disposal	50553	04-15-75	(None)
	Removal of Hill 733, Marine Corps Air Station	51529	10-16-75	(None)
	Fort Holabird Disposal, Baltimore	51669	11-17-75	(None)

APPENDIX B: SOURCES OF DRAFT AND FINAL ENVIRONMENTAL IMPACT ASSESSMENTS AND ENVIRONMENTAL IMPACT STATEMENTS

1. Summaries of Environmental Impact Statements (EIS's) that have been filed by Federal agencies with the Council on Environmental Quality (CEQ) under the provisions of the National Environmental Policy Act (NEPA) are published monthly in the "102 Monitor."[11]* This document has been published since March 1972 but does not have a cumulative index by agency or subject matter. The Environmental Law Institute (ELI) can provide a listing of EIS's by Federal agency from which a list can be compiled by subject area. The listing of EIS's for military installations in Appendix A was compiled from a list furnished by ELI (1346 Connecticut Avenue, N.W., Washington, D. C. 20031).

2. EIS's can also be obtained from the Federal agencies who generate and serve as repositories for the EIS's. Addresses and telephone numbers for these agencies are as follows:

Department of Agriculture

Coordinator of Environmental
Quality Activities
Office of the Secretary
U. S. Department of Agriculture
Room 359-A
Washington, D. C. 20250
(202) 447-3965

Atomic Energy Commission

For Non-Regulatory Matters:
Office of Assistant General Manager
E-201, AEC
Washington, D. C. 20545
(301) 973-4241

For Regulatory Matters:
Deputy Director for Reactor Projects
Directorate of Licensing
P-722, AEC
Washington, D. C. 20545
(301) 973-7373

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* Raised numbers refer to similarly numbered items in the References at the end of the main text.

Department of Commerce

Deputy Assistant Secretary for
Environmental Affairs
Department of Commerce
Washington, D. C. 20230
(202) 967-4335

Department of Defense, Air Force

Room 4D 873, The Pentagon
Washington, D. C. 20330
(202) 0X7-9297

Department of Defense, Army

Acting Chief, Environmental Office
Directorate of Installations
Office of the Deputy Chief of Staff
for Logistics
Washington, D. C. 20310
(202) 0X4-4269

Department of Defense, Army Corps of Engineers

Director, Office of Public Affairs
ATTN: DAEN-PAP
Office of the Chief of Engineers
U. S. Army Corps of Engineers
1000 Independence Avenue, S. W.
Washington, D. C. 20314
(202) 693-6861

Department of Defense, Navy

Special Assistant to the Assistant
Secretary of the Navy (Installations
and Logistics)
Washington, D. C. 20350
(202) 692-3227

Energy Resources Development Administration

Office of Assistant Administrator
E-201, ERDA
Washington, D. C. 20545
(301) 973-4241

Environmental Protection Agency

Director, Office of Federal Activities
Room 3630 Waterside Mall
Washington, D. C. 20460
(202) 755-0940

Federal Energy Administration

Director, Environmental Impact Division
Federal Energy Administration
New Post Office Building
12th and Pennsylvania Avenue, NW
Washington, D. C. 20461
(202) 961-6214

Federal Power Commission

Advisor on Environmental Quality
441 G. Street, NW
Washington, D. C. 20426
(202) 386-6084

General Services Administration

Executive Director of Environmental Affairs
General Services Administration
18th and F Streets, NW
Washington, D. C. 20405
(202) 343-4161

Department of Health, Education, and Welfare

Director, Office of Environmental Affairs
Office of the Assistant Secretary for Administration
and Management
Room 3718 HEW-North
Washington, D. C. 20202
(202) 963-4456

Department of Housing and Urban Development

Director, Office of Environmental Quality
Room 7258
451 7th Street, SW
Washington, D. C. 20410
(202) 755-6308

Department of Interior

Director, Environmental Project Review
Room 7260
Department of the Interior
Washington, D. C. 20240
(202) 343-3891

Interstate Commerce Commission

Supervisory Attorney Advisor for the Environmental Staff
Room 2370
12th St. and Constitution Avenue, NW
(202) 343-2086

National Aeronautics and Space Administration

Special Assistant, Office of Administration
NASA
Washington, D. C. 20546
(202) 962-8107

National Science Foundation

Deputy Assistant to the Director
National and International Programs
Room 703
Washington, D. C. 20550
(202) 632-4180

Nuclear Regulatory Commission

Director of Division of Reactor Licensing
P-722, NPC
Washington, D. C. 20555
(301) 492-7373

Postal Service

Director, Office of Buildings Analysis and Design
Real Estate and Buildings Department
U. S. Postal Service
Washington, D. C. 20260
(202) 245-4242

State Department

Special Assistant to the Secretary
for Environmental Affairs
Room 7819
Washington, D. C.
(202) 632-7964

Tennessee Valley Authority

Director of Environmental Planning
720 Edney Building
Chattanooga, Tennessee 37401

Department of Transportation

Director, Office of Environmental Affairs
400 7th Street, SW
Washington, D. C. 20590
(202) 426-4357

Treasury Department

Assistant Director
Office of Tax Analysis
Room 4205
Washington, D. C. 20220
(202) 964-2797

Water Resources Council

Director
2120 L Street, NW
8th Floor
Washington, D. C. 20037
(202) 254-6303

Veterans Administration

For Medical Facilities:
Assistant Chief, Medical Director for
Administration and Facilities
Veterans Administration
810 Vermont Avenue NW
Washington, D. C. 20420

For Housing:

Director, Loan Guarantee Service
Veterans Administration
810 Vermont Avenue, NW
Washington, D. C. 20420
(202) 389-2332

3. Personnel seeking to locate Environmental Impact Assessments (EIA's) or EIS's on a regional basis can consult the U. S. Bureau of the Budget Circular A-95.[12] This document contains a listing of state, metropolitan, and regional clearinghouses. Pursuant to the Intergovernment Cooperation Act of 1968, any agency of government or any organization or individual undertaking to apply for assistance for a project under a Federal program is required to notify the planning and development clearinghouse of the state (or states), the region, if there is one, or the metropolitan area in which the project is to be located. While the clearinghouses do not, in most cases, serve as repositories for EIA's and EIS's, a record of EIA's and EIS's for projects within the areal jurisdiction of the clearinghouse is maintained. Thus, if an EIA or EIS is to be prepared for a military activity in a specific area, the clearinghouse for that area can be contacted to find out if there are other EIA's or EIS's that would provide direction for EIA/EIS preparation related to the military activity.

APPENDIX C: LISTING OF ENVIRONMENTAL BASELINE ELEMENTS

This appendix contains a list of environmental baseline elements that may serve as the basis for constructing an environmental baseline description for an entire military installation or for a specific project. This list should not be considered as all-inclusive, but as outlined below, it does represent an attempt at identifying components that broadly describe the various sectors of the environment.

Ecology

1. Vegetation
   - a. Community composition
     - (1) Terrestrial (trees, shrubs, herbs, grasses)
     - (2) Aquatic (marine or freshwater)
     - (3) Important taxa (commercial, recreational, aesthetic, ecological, legally protected, etc.)
   - b. Species occurrence
     - (1) Range
     - (2) Distribution
   - c. Species characteristics
     - (1) Habitat requirements
       - (a) Climatic (precipitation, temperature, etc.)
       - (b) Physical (soil moisture, elevation, etc.)
       - (c) Chemical (nutrients, etc.)
       - (d) Biological (pollinators, disseminators, etc.)
     - (2) Density (or percent ground cover)
     - (3) Structural characteristics (height, stem and crown diameter, growth rate and reproduction potential, blade density, strength, etc.)
     - (4) Nutrient value (leaves, stems, roots, fruits)
     - (5) Diseased or noxious species
     - (6) Threatened or endangered species
   - d. Value potential of species
     - (1) Erosion prevention

(2) Wildlife habitat

(3) Field crops, orchards, timber

(4) Recreational or aesthetic

(5) Maintenance of ecological balance

(6) Grazing

e. Response to imposed stresses (management, construction, flooding, training, etc.)

f. Response to sporadic extremes (flood, drought, temperature, wind, fire, etc.)

g. Local, state, and Federal legislation relevant to threatened or endangered species

2. Wildlife

a. Community composition

(1) Terrestrial vertebrates (mammals, birds, etc.)

(2) Terrestrial invertebrates (insects, etc.)

(3) Aquatic vertebrates (fish, amphibians)

(4) Aquatic invertebrates (mollusks, insects, etc.)

(5) Important taxa

b. Species occurrence

(1) Range

(2) Distribution

(3) Migration routes

c. Species characteristics

(1) Habitat requirements

(a) Climatic (precipitation, temperature, etc.)

(b) Physical (elevation slope, soil type, shelter, etc.)

(c) Chemical (air quality, water quality, toxic material, etc.)

(d) Biological (food, prey, etc.)

(2) Density

(3) Reproductive potential and longevity

(4) Diseased or noxious species

(5) Threatened or endangered species

d. Value potential of species

(1) Economic

(2) Recreational or aesthetic

(3) Maintenance of ecological balance

e. Response to imposed stresses (agriculture, construction, recreation, training, etc.)

f. Response to sporadic extremes (flood, drought, temperature, wind, fire, etc.)

g. Local, state, and Federal legislation relevant to threatened or endangered species

Environmental Health

1. Health
   a. Sources of health records
   b. Type of health records that are maintained
   c. Health problems in area
   d. Local, state, and Federal health standards
2. Safety
   a. Sources of safety data
   b. Type of safety records that are maintained
   c. Safety problems in area
   d. Local, state, and Federal safety regulations
3. Health care services
   a. Health care services available
      (1) Primary care
      (2) Emergency care
      (3) Alcohol abuse
      (4) Drug abuse
      (5) School health
      (6) Physical rehabilitation
      (7) Home care
      (8) Comprehensive care for elderly and handicapped
      (9) Mental rehabilitation
   b. Health care problems in area

4. Health facilities (hospitals, clinics, rehabilitation centers, etc.)
   a. Services available at facility
   b. Area served
   c. Needs for expansion or improved service capability
   d. Patient statistics
5. Health personnel (physicians, dentists, nurses, pharmacists)
   a. Personnel assigned to specific health facilities
   b. Personnel in area compared with state average
   c. Personnel in area compared with national average
   d. Shortages
6. Resources for emergency medical needs
   a. Ambulance services
   b. Fire departments
   c. Specialized rescue units
   d. Communication systems

Air Quality

1. Climatology
   a. Temperature
   b. Wind
   c. Relative humidity
   d. Dew point
   e. Evaporation rate
   f. Precipitation
   g. Storm records
   h. Insolation
   i. Atmospheric pressure
   j. Visibility
2. Air pollution
   a. Pollutant sources (point, line, areal)
   b. Concentration of gases and particulates

c. Temperature inversions

d. Lapse rates

e. Mixing depth

f. Local, state, and Federal air-quality standards

Surface Water

1. Surface-water hydrology
   a. Classification of water bodies (lake, river, etc.)
   b. Watershed boundaries
   c. Gaging station data
      (1) Discharge
      (2) Velocity
      (3) Stage
      (4) Bank-full stage
      (5) Flood records
      (6) Water temperature
      (7) Sediment load
   d. Channel characteristics
      (1) Width at top of banks
      (2) Bank angle
      (3) Bank height
      (4) Manning's "n"
      (5) Bottom width
      (6) Bed gradient
   e. Surface-water utilization (public water supply, transportation, recreation, irrigation, electric power, etc.)
2. Water quality
   a. Turbidity
   b. Temperature
   c. Color
   d. Taste and odor characteristics
   e. Solids (suspended, floating, volatile, dissolved)

f. Liquids (oils, industrial effluents, etc.)

g. Biochemical oxygen demand

h. Dissolved oxygen

i. Nutrients

j. pH

k. Radioactivity

l. Aquatic life

m. Fecal coliform count

n. Responses to water-quality management

o. Local, state, and Federal legislation relevant to water-quality standards

Groundwater

1. Aquifers
   a. Location and areal extent
   b. Depth to aquifer
   c. Velocity of movement
   d. Thickness
   e. Composition
2. Water table
   a. Location and areal extent
   b. Depth to water table
   c. "Safe yield"
3. Aquicludes
   a. Location and areal extent
   b. Depth to aquiclude
   c. Composition
4. Locations of surface exposures
5. Utilization (public water supply, irrigation, industrial, etc.)
6. Quality of groundwater (see "Water quality" under "Surface Water" for suggested terms to be considered)
7. Response to groundwater management

Sociology

1. Population
   - a. Statistics
     - (1) Population (cities, counties, urban areas, suburban areas, subdivisions, military reservations, etc.)
     - (2) Land areas
     - (3) Population densities
   - b. Growth (or decay)
     - (1) Changes in population (births, deaths, people moving into and out of area)
     - (2) Projected growth
     - (3) Growth related to specific activities
     - (4) Timing of growth related to other characteristics
     - (5) Ultimate population
     - (6) Locations where growth is most likely
     - (7) Growth compared with rest of county or state
   - c. Composition
     - (1) Male; female
     - (2) Institutional
     - (3) Foreign national
     - (4) Ethnic groups
     - (5) Age distribution
     - (6) Married
     - (7) Divorced
     - (8) Families
     - (9) Children per family
2. Labor
   - a. Annual rate of new jobs available; jobs lost
   - b. Composition of labor force
     - (1) Total number of workers
     - (2) Age distribution
     - (3) Employment by Standard Industrial Class (SIC)
     - (4) Income distribution for workers (age, SIC, sex)

(5) Unemployed workers (age, SIC, sex)

(6) Workers in civilian/military labor force

(7) Females in civilian/military labor force

(8) Union members

(9) Professionals

(10) Workers living outside of impacted area

(11) Workers using public transportation

3. Housing

a. Total number of units

b. Year-round units

c. Rooms per unit

d. Single-owner units

e. Multiple-owner units

f. Cost of single- and multiple-owner units

g. Single-rental units

h. Multiple-rental units

i. Monthly tenant fee for single- and multiple-rental units

j. Mobile homes

k. Mobile homes spaces

l. Owner units being subsidized

m. Rental units being subsidized

n. Units built before 1940, 1960, 1975.

o. Occupancy rates (single-owner, multiple-owner, single-rental, multiple-rental, owner-subsidized, rental-subsidized, mobile home spaces)

p. Factors that influence variation in occupancy rates

q. Units without:

(1) Indoor plumbing

(2) Air conditioning

(3) Telephone

(4) An automobile

r. Heads of households that are female

4. Social benefits

a. Recipients receiving:

(1) Retirement benefits

(2) Unemployment benefits

(3) Workmen's compensation

(4) Welfare subsidies

(5) Food stamps

b. Economic value of:

(1) Retirement benefits

(2) Unemployment benefits

(3) Workmen's compensation

(4) Welfare subsidies

(5) Food stamps

c. Funds raised for charities

d. Services rendered by community organizations

5. Law enforcement and fire protection

a. Function and capability of:

(1) Local police and sheriff's department

(2) State and national law enforcement agencies

(3) Correction and detention facilities

(4) Judicial services

(5) Fire department

(6) Training facilities for law enforcement and fire protection

b. Crime statistics

(1) Criminal homicide

(2) Forcible rape

(3) Armed robbery

(4) Aggravated assault

(5) Larceny

(6) Drunkenness

(7) Disorderly conduct

(8) Driving while intoxicated

(9) Violation of liquor laws

(10) Vagrancy

(11) Violation of drug laws

(12) Violation of traffic regulations

(13) Participation in civil disorders

c. Other statistics

(1) Automobile accidents

(2) Automobile accidents involving at least one death

(3) Accidental deaths other than auto

(4) Suicides

(5) Practicing lawyers

(6) Firearms sold

(7) Bondsmen

(8) Calls answered by fire department

(9) Reasons for fires

(10) Number of deaths due to fires

(11) Public programs directed toward crime and fire prevention

6. Education

a. Characteristics of educational institutions

(1) Academic level (primary, secondary, college, etc.)

(2) Student enrollment

(3) Changes of enrollment

(4) Design enrollment

(5) Instructors

(6) Classrooms

(7) Social problems (ethnic, racial, etc.)

(8) Special training facilities

(9) Strong curricula offered

(10) Funds required for operation

b. Educational level of population (age, SIC, sex)

(1) Academic years completed

(2) Currently in school

(3) Illiteracy rate

7. Cultural resources

a. Facilities for cultural activities (libraries, museums, art galleries, theaters, historical and archeological sites, etc.)

b. Groups engaged in cultural activities (art associations, little theater groups, historical preservation societies, etc.)

c. Community events that focus public attention on local culture (or ethnic background)

d. General description of area's ethnic origins and philosophy

8. Recreation

a. Facilities suitable for spectator recreational events (football stadiums, race tracks, etc.)

b. Facilities suitable for participant recreation (golf courses, campgrounds, "tourist attractions," hiking trails, etc.)

c. Facilities where suspected or known illegal or questionable activities occur (gambling, prostitution, etc.)

d. Local recreational programs and events (high school football, little league baseball, annual fishing rodeo, etc.)

9. Community organizations

a. Objectives and activities of community organizations (Chamber of Commerce, Boy Scouts, Lions, Red Cross, etc.)

b. Effectiveness of organizations in meeting objectives

c. Benefit to community of organizational activities

10. Communications

a. Communications facilities (post offices, radio and TV stations, newspapers, telephone systems, telegraph offices, emergency communications centers)

b. Volume of mail handled by post offices

c. Coverage of radio and TV stations

d. Audience of radio and TV stations

e. Number of radios and TV's

f. Circulation of newspapers

g. Distribution area of newspapers

h. Telephones in use

i. Telephone calls handled

j. Monthly cost of telephone service

k. Messages handled by telegraph offices

l. Emergency communications capabilities

Economics

1. Personal income
   a. Income distribution (age, SIC, size, sex)
   b. Total income in impacted area
   c. Value to local economy
2. Economic statistics for commercial enterprises (agriculture, construction, fishing, manufacturing, mining, retail, services, transportation, utilities, etc.)
   a. Gross income
   b. Net income
   c. Payroll
   d. Value to local economy
3. Banks, savings and loan institutions, credit unions
   a. Total deposits
   b. Liquid assets
   c. Total assets
   d. Total liabilities
   e. Value to local economy
4. Educational institutions
   a. Funds required for operation
   b. Funds derived from public sources, private sources
   c. Payroll
   d. Value to local economy
5. Governments (city, county, township, state, national, etc.)
   a. Revenue (total, intergovernmental, property tax, sales tax, income tax, etc.)
   b. Expenditures (debt retirement, highway, education, public welfare, health, payroll, etc.)
   c. Value to local economy
   d. Tax rates (property, sales, state and local income tax)

e. Assessed valuation of real property (commercial, residential, etc.)

Earth Science

1. Topography
   a. Relief
   b. Microfeatures
   c. Erosion
   d. Aesthetic value
2. Soils and geology
   a. Classification of soils (USCS, AASHO, USDA, etc.)
   b. Physical description of soils (particle-size distribution, moisture content, permeability, strength, erodibility, etc.)
   c. Depth to bedrock
   d. Depth to water table
   e. Thicknesses of soil layers
   f. Classification of rock and glacial deposits
   g. Seismically active zones
   h. Geothermal sources
   i. Value potential (construction material, wildlife habitat, aesthetics, energy source, etc.)
   j. Response to cultural activities (agriculture, mining, construction, etc.)
   k. Local, state, and Federal legislation relevant to soil conservation and preservation of nonrenewable resources

Land Use

1. Areal land use classifications
   a. Agriculture
   b. Airports
   c. Archeological and historical sites

d. Barren
e. Commercial, institutional, government, and services
f. Estuaries, lakes, and reservoirs
g. Forests
h. Grasslands
i. Marshes and wetlands
j. Mining
k. Oil and gas fields
l. Permanent snow and ice fields
m. Recreational
n. Residential
o. Scenic
p. Waste disposal
q. Wildlife habitats

2. Easement land-use classifications
   a. Cross-country electrical transmission lines
   b. Cross-country gas pipelines
   c. Highways and streets
   d. Levees
   e. Microwave links
   f. Railroads
   g. Streams (navigable)
   h. Cross-country telephone lines
   i. Cross-country water pipelines
3. Local, state, and Federal legislation relevant to land use

Noise

1. Sources (location, level, duration, repetitions, proximity to populated area, etc.)
2. Effects (physiological, psychological, communications, performance, social behavior, etc.)
3. Local, state, and Federal legislation relevant to noise control

Transportation

1. Terminals and links in transportation network (air, bus, truck, railroad, boat, etc.)
2. Traffic flow (vehicle, passenger, cargo)
3. Design criteria (life, capacity)

Aesthetics

1. Aesthetic characteristics that are unique to region that contains impact area
2. Description of area immediately adjacent to proposed activity site
3. Compatibility of existing architecture and landscape with proposed activity

Energy and Resource Conservation

1. Energy resources
   - a. Sources of energy (oil, gas, and coal fields; dams with hydroelectric production capability; mines producing radioactive material suitable for reactor fuel; etc.)
   - b. Active wells in oil and gas fields
   - c. Barrels produced from oil fields
   - d. Volume of gas produced from gas fields
   - e. Mines in coal fields
   - f. Volume of coal mined in coal fields
   - g. Estimate of reserves in oil, coal, and gas fields
   - h. Estimate of electrical energy available from hydroelectric facilities
   - i. Estimate of potential energy available in mined radioactive material
2. Public utilities
   - a. Electricity
     - (1) Distribution system (generator stations, transmission grids, switch yards, etc.)

(2) Power used by consumers (commercial, residential, municipal, etc.)

(3) Unit cost to consumers; to other power grids

(4) Consumers using electricity

b. Gas

(1) Distribution system (gas fields, pipelines, pumping stations, distribution centers, storage capacity of system, losses due to leaks in system, etc.)

(2) Volume of gas used by consumers (commercial, residential, municipal, etc.)

(3) Unit cost to consumers

(4) Consumers using gas

c. Sewers

(1) Sewage system (pipelines, pumping stations, treatment plants, etc.)

(2) Volume of sewage processed (commercial, residential, municipal, etc.)

(3) Unit cost to consumers for sewage access

(4) Users of sewage systems

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